

VOLUME V P.M. SESSION  
UNITED STATES DISTRICT COURT  
NORTHERN DISTRICT OF NEW YORK

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CORNELL UNIVERSITY, a non-profit  
New York corporation, and CORNELL  
RESEARCH FOUNDATION, INC., a non-  
profit New York Corporation,

Plaintiffs,

vs. 01-CV-1974

HEWLETT-PACKARD COMPANY, a  
Delaware corporation,

Defendant.

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HEWLETT-PACKARD COMPANY, a  
Delaware corporation,  
Counterclaimant,

vs.  
CORNELL UNIVERSITY, a non-profit  
New York corporation, and CORNELL  
RESEARCH FOUNDATION, INC., a non-  
profit New York corporation,

Counterdefendants.

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Transcript of a Jury Trial held on May 23,  
2008, at the James Hanley Federal Building,  
100 South Clinton Street, Syracuse, New York,  
the HONORABLE RANDALL R. RADER, United States  
Circuit Judge, Presiding.

A P P E A R A N C E S

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1 (Open Court, Jury Out, 1:12 p.m.)

2 MR. CUNNINGHAM: Your Honor, before we bring  
3 in the jury could we address one issue real quick.

4 THE COURT: Sure.

5 MR. CUNNINGHAM: Sorry, your Honor. I just  
6 didn't want to do this in the presence of the jury. So this  
7 is for their expert Rappaport, they're not going to show this  
8 slide but my understanding is they are going to elicit  
9 testimony on point one there, and we think that's within the  
10 scope of the court's order this morning, so we would like  
11 some sort of guidance on how --

12 THE COURT: They're not going to show this?

13 MR. CUNNINGHAM: They're not going to show the  
14 slide itself but they're going to elicit testimony on the  
15 topic.

16 MR. ANDERSON: Well, the issue is, and I tried  
17 to address it earlier with describing Mr. Rappaport's  
18 testimony, and he's going to be from a licensing perspective,  
19 and a licensing professional looking at circumstances of this  
20 case based on his experience, what would he use as the base,  
21 the royalty base in this case and his opinion is it would be  
22 servers and workstations and that's what I was trying to  
23 clarify earlier this morning as to which side of the line it  
24 fell on your Honor's decision, because your Honor's decision  
25 went to economic perspective, but I don't want to run afoul

1 of it, and if the decision is that goes for --

2 THE COURT: I don't suppose I have any problem  
3 with him offering his opinion as to what he'd do which is  
4 separate from what Cornell, with a little guidance from the  
5 court, has chosen to do.

6 MR. CUNNINGHAM: All right, your Honor, I  
7 understand.

8 THE COURT: The record should note that I  
9 elicited a smile with my characterization, not a very  
10 pleasant smile.

11 MR. CUNNINGHAM: My smile was pleasant.

12 THE COURT: Well, yours was fine. So you're  
13 fine, Mr. Anderson.

14 MR. ANDERSON: Thank you, your Honor.

15 MR. CUNNINGHAM: Thank you.

16 THE COURT: And Mike, can you bring in our  
17 jury.

18 (Jury Present, 1:14 p.m.)

19 THE COURT: Mr. Poplawski, or Mr. Anderson,  
20 who am I acknowledging here?

21 MR. POPLAWSKI: Yes, good afternoon, your  
22 Honor. I believe what we have in mind next is to play the  
23 deposition testimony, at least some of the experts --  
24 excerpts of HP's at least then director of university  
25 worldwide relations, Wayne Johnson.

1 THE COURT: Let's do it.

2 (Video Played, 1:16 p.m. to 1:49 p.m.)

3 THE COURT: Okay, Mr. Poplawski, where do we  
4 go from here?

5 MR. POPLAWSKI: Your Honor, we would now like  
6 to call a live witness, Robert Swieringa.

7 MR. MIYAMOTO: Your Honor, David Miyamoto,  
8 I'll be conducting Mr. Swieringa's examination.

9 THE CLERK: You can step right over here,  
10 please. Please state your name for the record.

11 THE WITNESS: Robert Swieringa,  
12 S-w-i-e-r-i-n-g-a.

13 THE CLERK: Thank you. Please raise your  
14 right hand.

15  
16 R O B E R T S W I E R I N G A , called as a  
17 witness and being duly sworn, testifies as follows:

18 THE COURT: Are you ready to proceed,  
19 Mr. Miyamoto?

20 MR. MIYAMOTO: Yes, I am.

21 DIRECT EXAMINATION BY MR. MIYAMOTO:

22 Q Please tell me your name.

23 A My name is Robert or Bob Swieringa.

24 Q Where do you live?

25 A I live in Ithaca, New York.

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1 Q How long have you lived in Ithaca?

2 A I've lived in Ithaca off and on since 1974. I  
3 moved there in '74, I moved away in '86 and moved back in  
4 '97.

5 Q What brought you back?

6 A I was recruited by Cornell University to  
7 become associate professor of accounting in the Johnson  
8 School. I chose early in my career to be an academic, earned  
9 a PhD at the University of Illinois in 1969. My first job  
10 was assistant professor of accounting at the Stanford  
11 Graduate School of Business where I was there from 1968  
12 through 1974. I then was recruited by the Johnson School as  
13 an associate professor. I was tenured, 1977, became a full  
14 professor in 1981.

15 Q Now you mentioned that you moved away from  
16 Ithaca in the mid 1980s. What took you away from Ithaca?

17 A I became an accounting professor who had a  
18 real passion for accounting and I wrote a series of  
19 accounting issues that became quite popular, and these  
20 articles were picked up by an organization called the  
21 Financial Accounting Standards Board which is the  
22 organization that writes the accounting standards for the  
23 United States. And in 1985 they recruited me, and I came  
24 there as a member of a seven-member board and I was a member  
25 of that board from 1986 to 1996.

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1 Q Did you return to teaching at some point?

2 A I did. The term that I had it at the FASB was  
3 limited to two five-year terms. I left in 1996 and became a  
4 professor of accounting at the Yale School of Management. I  
5 then left from there, was recruited to go back to Cornell as  
6 dean of the business school in 1997, and I was dean from 1997  
7 through 2007, and also am professor of accounting and back to  
8 teaching accounting.

9 Q So is it correct that currently you're no  
10 longer the dean of the Johnson Graduate School of Management?

11 A That's correct.

12 Q Are you what is known as a dean emeritus?

13 A Yes, I am.

14 Q Could you give the jury a little background on  
15 the Johnson Graduate School of Management at Cornell, please?

16 A The Johnson Graduate School of Management is  
17 the graduate business school at Cornell University. Cornell  
18 has about a dozen colleges and schools and this is the school  
19 that issues the MBA degree, the master of business  
20 administration degree. Our students have undergraduate  
21 degrees, they have an average of about five years of  
22 experience and they come to the Johnson School often because  
23 they're making a major change in their career, either to try  
24 to extend their career or to change careers. And in doing  
25 that we have a very powerful faculty, research faculty, we

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1 have a very innovative educational program and we also have  
2 very successful graduates and the Johnson School has been  
3 considered one of the best business schools in the world over  
4 the last 10 to 12 years.

5 Q Could you briefly describe what your role was  
6 while you were the dean of the Graduate School of Management  
7 at Cornell between 1997 and 2007?

8 A The dean of the business school is the chief  
9 academic and administrative officer of the school. And I  
10 reported to the provost who is the chief operating officer  
11 and to the president of the university. And the role of a  
12 dean is to be concerned with and have responsibility for  
13 strategic planning, for budgeting, for personnel decisions,  
14 for initiatives, academic initiatives and other programs and  
15 so forth and then also to basically be the general  
16 administrator of the school.

17 Q Is the position of dean of the Johnson  
18 Graduate School of Management a senior position in the  
19 administration at Cornell?

20 A It is. In fact the dean of the school will be  
21 on the platform for commencement on Sunday.

22 Q How many deans are there at the Johnson  
23 Graduate School of Management?

24 A Well, there's one but there are a number of  
25 associate deans who report to the dean, but there's only one



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1 dean.

2 Q I'd like you to now focus back in time in  
3 2002, if you could, and specifically April 2002. Did you  
4 know an individual who worked at Hewlett-Packard by the name  
5 of Jim Cooper as of April 2002?

6 A Yes, I know Jim Cooper.

7 Q And how do you know Mr. Cooper?

8 A I know him from his activities as the  
9 on-campus recruiting director for HP, and he interacted  
10 mostly with the Johnson School and other colleges and units  
11 at Cornell. Jim's a Cornellian, he spent a lot of time in  
12 the school helping recruit students and Hewlett-Packard was  
13 very successful in recruiting students.

14 Q Now as of April 2002 you'd talked with  
15 Mr. Cooper before?

16 A Yes, I did. I talked with him on April 16th  
17 of 2002.

18 Q Well, I'm going back before April 16th.

19 A I knew him in a lot of instances, he would  
20 come to campus, they would come several times a year to make  
21 the plans for the recruiting season with presentations, with  
22 various kinds of interviews and office hours and other ways  
23 to interact with students and then there would be an  
24 interview season that usually would take place in the  
25 springtime. And so there was a lot of preparation work, a

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1 lot of interactions with people in the school and so I knew  
2 Jim very well.

3 Q Now you mention April 16th, 2002. Do you  
4 recall talking with Mr. Cooper from Hewlett-Packard on  
5 April 16th, 2002?

6 A I do.

7 Q Did the subject of this lawsuit between  
8 Cornell and Hewlett-Packard come up in that conversation?

9 A Yes, it did.

10 Q Can you tell me the circumstances under which  
11 you had the conversation with Jim Cooper from Hewlett-Packard  
12 on April 16th, 2002?

13 A Jim and I happened to be on the same flight  
14 from Syracuse to Chicago on the 16th, and we had a chance  
15 meeting, we ran into each other as we departed from the plane  
16 in the gate area and had a conversation as we walked through  
17 the concourse.

18 Q Who brought up the subject of this lawsuit  
19 between Cornell and Hewlett-Packard?

20 A Jim did.

21 Q And was the discussion with Mr. Cooper  
22 memorable to you?

23 A It is, I remember it well. Jim was supposed  
24 to meet with me the previous day on the Monday and in fact  
25 Jim Cooper and a Wayne Johnson had come to the Johnson School

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1 and to other units at Cornell, ostensibly to meet with us, to  
2 meet Wayne Johnson who was becoming the new head of  
3 university relations and then also to talk about strategies  
4 going forward. And I was not able to meet with him on that  
5 day, and so what happened was that when Jim saw me at the  
6 airport we had this chance meeting, he used it as an  
7 opportunity to bring up the lawsuit and to talk with me.

8 Q What did he say about the lawsuit?

9 A He indicated that the lawsuit was going to  
10 have a devastating impact on recruiting relationships with  
11 the Johnson School, with corporate relationships that we had,  
12 HP had been a major corporate partner of ours, and that he  
13 persuaded -- wanted me to intervene with President Hunter  
14 Rawlings to ask him to drop the lawsuit.

15 Q Who was the president of Cornell in April  
16 2002?

17 A It was Hunter Rawlings.

18 Q And that was a person to whom you reported as  
19 dean of the Johnson School?

20 A Yes, it was.

21 Q Were you surprised Mr. Cooper raised these  
22 things with you in the airport at O'Hare?

23 A No, I actually wasn't surprised.

24 Q Why not?

25 A And the reason is that the night before I had

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1 a phone call from Dick Shafer who was my associate dean for  
2 corporate relations and who had attended the meetings that  
3 took place on Monday, and he wanted me to know that the  
4 agenda that originally was in place, that we would be meeting  
5 with Wayne Johnson and having a discussion of strategies that  
6 the actual discussion in that meeting focused on the lawsuit,  
7 on the potential effects of the lawsuit, on both recruiting  
8 and on the corporate relationship.

9 THE COURT: Mr. Miyamoto, could you suspend  
10 for a second, could I talk just a second with counsel.

11 (A discussion was held off the record at side  
12 bar.)

13 THE COURT: Excuse my interruption,  
14 Mr. Miyamoto, you may inquire.

15 MR. MIYAMOTO: Thank you, your Honor.

16 Q You mentioned you weren't surprised,  
17 Mr. Swieringa. Did you have any other reaction when  
18 Mr. Cooper raised the issue of a lawsuit in O'Hare Airport?

19 A Well, yes, I was very concerned about the  
20 issues that he was discussing, and therefore I listened very  
21 intently as we walked down the concourse talking about these  
22 issues.

23 Q At that time, April 2002, were you involved in  
24 any way with this lawsuit?

25 A Not at all.

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1 Q Did you have any responsibility for the  
2 lawsuit on behalf of the university?

3 A Not at all.

4 Q Have you ever had any involvement with this  
5 lawsuit?

6 A No.

7 MR. MIYAMOTO: I have no further questions.

8 THE COURT: Thank you. Would you care to  
9 inquire, Mr. Cunningham.

10 MR. CUNNINGHAM: Just a couple of questions,  
11 your Honor.

12 CROSS-EXAMINATION BY MR. CUNNINGHAM:

13 Q Good afternoon, sir, my name is Sean  
14 Cunningham, we haven't met before. You would agree with me,  
15 wouldn't you, sir, that Hewlett-Packard's been a significant  
16 donor to Cornell University over the years?

17 A Yes.

18 Q And in fact in between the years 1980 through  
19 2001, they gave the university over \$25 million in donations  
20 and equipment?

21 A I do not know that number, but they have been  
22 a significant contributor.

23 Q And in fact as of spring 2006, Hewlett-Packard  
24 was listed as a principal partner of the Johnson Business  
25 School, correct?

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1           A     That could be. I do not know that as a fact,  
2     but it could be.

3           Q     Let's actually confirm that. Why don't we  
4     pull up tab 2, please. This is a corporate connections  
5     publication from your business school?

6           A     Mm-hmm.

7           Q     That's your picture at the bottom?

8           A     Yes, it is.

9           Q     Would you blow up the corporate partners part  
10    of that. And you'll see at the top there it says principal  
11    partners, \$1 million up cumulative, and Hewlett-Packard is  
12    listed there, do you see that?

13          A     Yes, I do.

14          Q     Okay. And Hewlett-Packard to this day  
15    continues to actively recruit Cornell graduates, does it not?

16          A     It is active on campus, yes.

17               MR. CUNNINGHAM: Thank you.

18          A     On this, I believe the cumulative amount is,  
19    means, it's over -- cumulative over an extended period of  
20    time.

21               MR. CUNNINGHAM: Okay, that's fine, thank you.  
22    No further questions.

23               THE COURT: Anything further, Mr. Miyamoto?

24               MR. MIYAMOTO: Nothing further of this  
25    witness, your Honor.

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1 THE COURT: Thank you, you may step down.

2 THE WITNESS: Thank you.

3 (Whereupon the witness was excused,

4 2:02 p.m.)

5 THE COURT: Yes.

6 MR. POPLAWSKI: With the court's permission we  
7 would like to call our next live witness, Dr. Hunter  
8 Rawlings.

9 THE CLERK: Good afternoon. Please state your  
10 name for the court reporter and spell it.

11 THE WITNESS: Hunter Rawlings, H-u-n-t-e-r,  
12 R-a-w-l-i-n-g-s.

13 THE CLERK: Please raise your right hand.

14

15 H U N T E R R A W L I N G S , called as a  
16 witness and being duly sworn, testifies as follows:

17 (A discussion was held off the record at side  
18 bar, 2:04 p.m.)

19 THE COURT: Excuse my interruption. Excuse my  
20 interruption, Mr. Poplawski. I believe you were going to  
21 inquire.

22 MR. POPLAWSKI: Thank you, your Honor.

23 DIRECT EXAMINATION BY MR. POPLAWSKI:

24 Q Please tell the jury your name.

25 A My name is Hunter Rawlings.

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1 Q And where is your home?

2 A I live just outside of Ithaca, New York.

3 Q How long have you lived in Upstate New York?

4 A Since 1995.

5 Q What brought you to Ithaca?

6 A I came as the president of Cornell in the  
7 summer of 1995.

8 Q How did that come about?

9 A Well, before that I was the president of the  
10 University of Iowa in Iowa City, Iowa and I was recruited to  
11 come to Cornell as president in 1995.

12 Q You have any working relationship with Cornell  
13 today?

14 A Yes. I'm a professor of classics and history  
15 at Cornell, I'm happy to say.

16 Q When did you obtain your degree?

17 A I obtained my bachelor's degree in 1966 from  
18 Haverford College and I got a PhD from Princeton in 1970.

19 Q Would you please summarize your work  
20 experience after leaving Princeton and prior to coming to  
21 Cornell?

22 A Yes, I'll be brief. I was an assistant  
23 professor at the University of Colorado, and then was  
24 promoted to associate professor and then full professor at  
25 Colorado, and then at Colorado I also began to work in



1 administration, academic administration, as associate  
2 provost, and then I became vice president for academic  
3 affairs and research at the University of Colorado in 1984.

4 Q Now would you briefly explain to the jury what  
5 you meant by the administrative side at the university?

6 A Yes. Academic administrators such as deans,  
7 you just met Dean Swieringa, and provosts and vice provosts  
8 work with faculty members in order to try to enhance their  
9 work. They also work with students to try to improve work in  
10 the classroom, and they manage different departments or  
11 colleges such as the College of Business at Cornell or the  
12 College of Arts and Sciences. So an academic administrator  
13 then works in many dimensions at a university within a  
14 college or above the college level.

15 Q At some point in time did you leave the  
16 University of Colorado?

17 A Yes. I left the University of Colorado in  
18 1988 to become the president of the University of Iowa.

19 Q Now, let's go back to the time that you were  
20 president of Cornell. Did you have occasion to familiarize  
21 yourself with how Cornell handled ownership of intellectual  
22 properties such as patents and technology transfers such as  
23 licenses of patents?

24 A Yes, occasionally, I did. Not very often  
25 because Cornell's a very large university, there are many

1 dimensions to it so it was certainly not an area where I  
2 spent much of my time but occasionally I would work with the  
3 Cornell Research Foundation, for example, on issues involving  
4 licensing of patents and such.

5 Q What did Cornell Research Foundation do at  
6 that time?

7 A It was the job of the Cornell Research  
8 Foundation to manage the intellectual property at Cornell,  
9 that is to try to help faculty members when they develop new  
10 discoveries, make sure that those discoveries would be  
11 properly patented if they deserved to patent and that those  
12 patents could be properly licensed to companies if companies  
13 wanted to use some of the ideas that were inherent in those  
14 patents.

15 Q During the time that you were the president of  
16 Cornell University, did you undertake any efforts to license  
17 any Cornell patent?

18 A Personally that was not something that I spent  
19 time on, but certainly the university did because it's a very  
20 important part of the university's mission.

21 Q Are you familiar with a patent known as the  
22 Torng patent?

23 A Yes, I am.

24 Q Did you ever undertake any effort to license  
25 the Cornell patent during the time that you were president at

1 Cornell?

2 A Not personally. As I said earlier that was  
3 something that the research foundation mostly did, but I  
4 became involved somewhat with this particular patent because  
5 it was regarded as a very important one.

6 Q At some point in time, did you have any  
7 discussion with anybody at HP concerning the Torng patent?

8 A Yes, I did.

9 Q You recall when that occurred?

10 A It occurred in the fall of 1996.

11 Q With whom at HP did you have the discussion of  
12 the Torng patent in the fall of 1996?

13 A Had a discussion with Mr. Lew Platt who at  
14 that time was the CEO of Hewlett-Packard, was a Cornell  
15 alumnus, and I met with Mr. Platt in California to discuss  
16 the Torng patent.

17 Q All right. Please give the jury some further  
18 details concerning what you recall of your discussion with  
19 Mr. Platt about Dr. Torng's patent in the fall of 1996.

20 A Sure. I felt it was important since this was  
21 such an important patent and we were concerned about HP's  
22 possible use of it, I thought it was important for me to  
23 discuss that with Mr. Platt personally if possible in order  
24 to, at the highest level of our two institutions, ensure that  
25 we could have a road towards some kind of agreement. And so

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1 I thought it would be opportune when I was in California to  
2 meet with Mr. Platt in order to emphasize for him how  
3 important this patent was to Cornell.

4 Q Do you recall giving Mr. Platt any document at  
5 this fall 1996 meeting?

6 A I think I gave him a courtesy copy of a letter  
7 that Cornell had written to HP very recently concerning  
8 possible infringement of Cornell's patent.

9 Q May we have Plaintiff's Exhibit 948, please.  
10 Dr. Rawlings, this is an August 30th, 1996 letter to the  
11 general counsel of HP, do you recognize it?

12 A I do.

13 Q And what is it, sir?

14 A It's a letter from the Cornell Research  
15 Foundation to HP's vice president of corporate affairs, in  
16 which we convey the strong view that Dr. Torng's patent is  
17 essentially an important one and we want HP to recognize that  
18 we believe they are infringing the patent.

19 Q And is this August 30th, 1996 letter to the  
20 best of your knowledge the document that you gave to  
21 Mr. Platt at the fall 1996 meeting that you had with him?

22 A Yes. It's what I called a courtesy copy  
23 because we had already sent a copy and I just wanted to  
24 personally give it to him so that he would see exactly what I  
25 was talking about.

1           Q     Now, what was Mr. Platt's reaction to what you  
2 discussed with him at this fall 1996 meeting concerning  
3 Dr. Torng's patent?

4           A     Well, it was a very friendly meeting, I recall  
5 it rather well, we talked about a number of different things  
6 and this was among those things, and he was grateful to me or  
7 at least he said he was grateful to me for bringing this  
8 particular issue to his attention because he said that the  
9 processor that this letter concerned was an especially  
10 important product for HP, so he seemed grateful.

11           Q     Did you then have another discussion with  
12 Mr. Platt?

13           A     Well, at the end of our discussion in  
14 California, I asked Mr. Platt if he would check into this and  
15 get back to me to let me know what his view was so that we  
16 could possibly proceed toward some kind of agreement and he  
17 said he would. But I didn't hear back from him. So a number  
18 of weeks went by, it could have been several months, I'm not  
19 sure of the exact amount of time, but quite a bit of time  
20 went by, and when I didn't get a reply to what I thought was  
21 an important matter, I phoned him.

22           Q     And do you recall that discussion?

23           A     Yes. I phoned him, he was good enough to take  
24 my call, and I said Lew, remember that patent matter that I  
25 raised with you when I came to see you in your offices at HP,

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1 and he said yes, Hunter, I do remember that. And I said,  
2 well, do you have a view now about how HP would like to  
3 discuss it with us and possibly make progress toward some  
4 agreement. And he said, you know, Hunter, our people don't  
5 think we've infringed that patent. And I said, well, we  
6 think that you are infringing that patent and we see it as a  
7 very serious issue, and I hope you will rethink this because  
8 we see it as so serious that it's something that we might  
9 pursue if we don't come to some kind of an agreement. And  
10 Lew said then that he would check with his people again to  
11 see if they wanted to take a different response and so I said  
12 thank you very much.

13 Q Now, as of 1996, was Carly Fiorina to your  
14 knowledge a president of HP?

15 A Not in 1996, as I recall.

16 Q Now, let me put up Plaintiff's Exhibit 960.  
17 Did you ever write any letter to Carly Fiorina of HP  
18 concerning this lawsuit?

19 A Yes, I did.

20 Q And under what circumstances did you write  
21 that letter?

22 A Well, the letter that you've put up on the  
23 screen which is dated April 30th, 2002 is a letter that I  
24 sent to Ms. Fiorina following the visit to the Cornell campus  
25 of the three representatives that are listed there in the

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1 first paragraph, and which was the subject of this recent  
2 discussion here in the court.

3 MR. POPLAWSKI: All right. Mr. Hoy, may we  
4 have paragraph 3, please.

5 MR. ALLCOCK: Objection, relevance.

6 MR. POPLAWSKI: I can move on, your Honor.

7 THE COURT: Thank you.

8 Q Now, why as president of Cornell were you  
9 involved in an attempt to license the Torng invention to HP?

10 A Well, for a couple of reasons. One is that  
11 Mr. Platt was a Cornell alumnus and so he was someone whom I  
12 got to know and it was helpful then to be able to discuss  
13 something from the president of the university to the CEO of  
14 the corporation. The second reason was that the Cornell  
15 Research Foundation made it very clear to me that this was a  
16 critically important patent which had very large potential  
17 applications in processors, and all of us were aware, even  
18 humanities professors like me, that speed in processors was  
19 tremendously important.

20 Q Did any of your efforts with HP help at all in  
21 terms of resolving this issue that Cornell had with HP  
22 concerning Dr. Torng's patent?

23 A I don't think so. I certainly tried to bring  
24 it to their attention, and in the letter to Ms. Fiorina I  
25 expressed my profound regret and shock that her employees had

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1 used language such as nuclear winter with Cornell deans and  
2 faculty members.

3 Q Is this lawsuit important to Cornell,  
4 Dr. Rawlings?

5 A It's extremely important to Cornell.

6 Q Why is that, sir?

7 A Well, just for two or three reasons. I can be  
8 brief but these are very important to Cornell. First of all,  
9 Cornell is a university that teaches students, conducts  
10 research, and serves the public. It's the land grant  
11 university for New York State. We offer education in fields  
12 like agriculture and veterinary medicine on behalf of the  
13 citizens of New York State and we do research in order to  
14 provide new ideas --

15 THE COURT: Excuse me, Mr. --

16 MR. ALLCOCK: I apologize, your Honor, Rule  
17 403.

18 MR. POPLAWSKI: This is the last question,  
19 your Honor.

20 THE COURT: Please complete this question  
21 then.

22 A So it is essential for us that in the basic  
23 business we do, namely teaching and research, we protect the  
24 ideas of our professors. Those professors depend on us to  
25 protect their ideas. For one thing, if we don't protect



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1 their ideas, they'll go somewhere else, to another university  
2 that will protect their ideas. Their ideas are their own  
3 property, they're vital to them. So it's essential to  
4 Cornell as it is to every other research university to  
5 protect the ideas that are generated by Cornell faculty  
6 members and students. It's a basic part of our business.

7 Secondly, because of our mission, which is  
8 aimed at helping the people of New York State as the land  
9 grant university for New York State, we're supposed to do  
10 research that serves the public. Research that's going to  
11 help in agriculture, research that's going to help in  
12 computing, research that's going to help in hotel management,  
13 and we're supposed to take those ideas and make them  
14 available to the public so that the public can use them.  
15 That's what we're here for. That's the basic part of our  
16 business. And so this lawsuit, it seems to me, gets to the  
17 heart of what Cornell does.

18 MR. POPLAWSKI: I have no further questions on  
19 direct.

20 THE COURT: Thank you. You have any  
21 questions, Mr. Allcock?

22 MR. ALLCOCK: I do, your Honor.

23 (2:19 p.m.)

24 CROSS-EXAMINATION BY MR. ALLCOCK:

25 Q Good afternoon, Dr. Rawlings.

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1 A Good afternoon.

2 Q My name's John Allcock, I'm here representing  
3 Hewlett-Packard. You mentioned that this was an important  
4 patent to Cornell?

5 A Yes.

6 Q And because it was an important patent, you  
7 got involved a little in the licensing of it, right?

8 A Yes.

9 Q But mostly the licensing of it was handled by  
10 the competent professionals at the Cornell Research  
11 Foundation, is that right?

12 A Yes, it is.

13 Q And you're aware that those professionals have  
14 tried to license the patent since even before it was granted,  
15 right?

16 A I'm aware that they always do that with all of  
17 our patents that seem licensable.

18 Q Right. And you're aware that in the 20 years  
19 since they've tried to license it, with the exception of the  
20 IBM license which arose from the initial grant, they've only  
21 been able to get one license?

22 A Well, as you know from discussion earlier,  
23 there's a dispute about whether there's a license to IBM.

24 Q Take that aside, other than that, they've only  
25 been able, in 20 years, to get one license, right?

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1           A     I don't know the number of licenses they've  
2     had for that.

3           Q     Now, you met with Mr. Platt on -- was it  
4     September 6th of 1996?

5           A     I don't recall the date exactly, I know it was  
6     early in the fall of '96.

7           Q     Okay. And where was the meeting?

8           A     The meeting was at his offices at  
9     Hewlett-Packard.

10          Q     I see. And you brought the patent to his  
11     attention?

12          A     I did.

13          Q     You have a liberal arts background?

14          A     I do.

15          Q     I see. And Mr. Platt, who I think has passed  
16     away now?

17          A     Yes.

18          Q     Mr. Platt had an electrical engineering  
19     background?

20          A     I think that's right.

21          Q     Right. And then what happened was around that  
22     time, a formal letter went to the general counsel at HP  
23     saying here's this patent?

24          A     I think that's the one that was up on the  
25     screen.

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1           Q     Right. And then do you know, and then you had  
2 another conversation with Mr. Platt subsequent to that?

3           A     Yes, I phoned him.

4           Q     Right. And do you know in the intervening  
5 time period, actually within a couple weeks of your meeting,  
6 Mr. Platt asked one of the senior PhD electrical engineers at  
7 HP, also a Cornell grad, to look at the Cornell '115 patent  
8 to see what he thought about whether HP infringed it?

9           A     I didn't know whom he might have talked to.

10          Q     Would you agree with me that that would be a  
11 prudent thing to do, asking a PhD EE to look at the patent?

12          A     I think it would be prudent to ask one's  
13 engineers who were working on that processor to look at that.

14          Q     So then he told you a few weeks later that it  
15 was his belief based on the research he conducted that the  
16 patent wasn't infringed, that they didn't use it; is that  
17 what he told you?

18          A     He did. He said, my people tell me they don't  
19 think we've infringed the patent.

20          Q     Right. And then shortly thereafter in the  
21 early part of '97, you all got a very detailed letter from an  
22 HP in-house lawyer spelling out the reasons why they didn't  
23 infringe, is that correct?

24          A     That, I don't know, I don't remember that.

25          Q     May I have Exhibit D130, please. Let me see

1 the first paragraph. Mr. Haeussler, is the -- was the head  
2 of licensing at CRF at the time, at that point?

3 A I believe so.

4 Q Right. Now, at this time, did you do anything  
5 to satisfy yourself that the Cornell claim had merit? Did  
6 you talk to a EE engineer?

7 A I talked with representatives from the Cornell  
8 Research Foundation and also some scientists at Cornell.

9 Q I see. Do you know that after Cornell got  
10 this letter, they didn't do anything for two years and three  
11 months?

12 A I don't believe that's correct. We had a  
13 number of different discussions at different levels of the  
14 university with HP about this patent in the ensuing months,  
15 at different levels.

16 Q There was no communication, written  
17 communication, to HP on this patent for two years and three  
18 months?

19 A That, I can't at all be sure of. I do know  
20 that we had meetings and phone discussions with HP, through  
21 the legal office, and through the Cornell Research  
22 Foundation.

23 MR. ALLCOCK: I have no further questions of  
24 the witness, your Honor.

25 THE COURT: Thank you. Anything further?

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1 MR. POPLAWSKI: No, your Honor.

2 THE COURT: You may step down. Let's take a  
3 10-minute break.

4 (Whereupon a recess was taken from 2:25 p.m.  
5 to 2:29 p.m.)

6 (Open Court, Jury Out, 2:29 p.m.)

7 THE COURT: As you know, I took this break to  
8 take the opportunity to admonish the parties, I'd like to  
9 move a little more quickly than we've been moving,  
10 Mr. Anderson.

11 MR. ANDERSON: Yes, your Honor. We're not  
12 going to call Mr. Elliot on marketing of servers, we'll save  
13 that for any rebuttal we may have and we'll just call  
14 Mr. Rappaport on licensing practices relevant to reasonable  
15 royalty.

16 THE COURT: And will he be your last witness?

17 MR. ANDERSON: He will be.

18 THE COURT: How long do you think he'll take?

19 MR. ANDERSON: I would hope I can complete his  
20 direct in half hour or so, your Honor.

21 THE COURT: Very good. And then you'll get  
22 your opportunity and they we'll move to the -- to your case.

23 MR. ALLCOCK: We'll have Mr. Lesartre but  
24 that's it, that's all we have for today.

25 THE COURT: How long do you need with

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1 Mr. Lesartre?

2 MR. ALLCOCK: We can play some video if we run  
3 out.

4 THE COURT: To work until 5?

5 MR. ALLCOCK: Absolutely.

6 THE COURT: And thank you, Mr. Anderson.  
7 Thank you for sensing my desire to streamline our  
8 proceedings.

9 (Pause in Proceedings.)

10 MR. ALLCOCK: Your Honor, may I inquire of  
11 counsel how long they're going to take on cross of  
12 Mr. Lesartre. Thirty minutes, okay.

13 (Pause in Proceedings.)

14 (Jury Present, 2:36 p.m.)

15 THE COURT: Mr. Anderson.

16 MR. ANDERSON: Yes, your Honor, Cornell calls  
17 Irving Rappaport.

18 THE CLERK: Good afternoon. Please state your  
19 name for the court reporter and spell it.

20 THE WITNESS: Irving Rappaport, I-r-v-i-n-g,  
21 R-a-p-p-a-p-o-r-t.

22 THE CLERK: Please raise your right hand.

23

24 I R V I N G R A P P A P O R T , called as a  
25 witness and being duly sworn, testifies as follows:

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1                   DIRECT EXAMINATION BY MR. ANDERSON:

2                   Q     Would you please tell the jury your name.

3                   A     Irving Rappaport.

4                   Q     Would you give the jury an overview of your  
5 educational background. Slide 2, please.

6                   A     In 1962, I obtained a Bachelor of Science in  
7 electrical engineering from Washington University in  
8 St. Louis. Following that, I went to law school and obtained  
9 a JD with honors in 1966 from George Washington University  
10 Law School, and then in 1969 I obtained a Masters of Business  
11 Administration degree from the Boston University Graduate  
12 School of Management.

13                  Q     Mr. Rappaport, could you give the jury a brief  
14 overview of your work experience. Slide 3, please.

15                  A     Yes. Well, right after graduating engineering  
16 school, I went to work at the United States Patent &  
17 Trademark Office as a patent examiner. As a patent examiner,  
18 I had responsibilities in our unit having to do with  
19 electrical components and my job was to examine and art on  
20 new patent applications filed in the art unit I was assigned  
21 to.

22                                 Following the patent office, I had a two-year  
23 commitment through ROTC to serve in the U.S. Army. I was  
24 assigned to work for a U.S. government patent lawyer. My  
25 branch was Army Security Agency, I was stationed at National



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1 Security Agency at Fort Meade, Maryland, where I worked as  
2 patent agent for the U.S. government patent attorney. Prior  
3 to my finishing law school, I worked for approximately a year  
4 for RCA Corporation in Washington, D.C. office, again as a  
5 patent agent.

6 When I finished law school, I then took a  
7 full-time position as patent and trademark attorney with  
8 Raytheon Corporation at their headquarters in Lexington,  
9 Massachusetts.

10 And now I will skip to the part of my career  
11 that I think is most relevant to this case, which is the  
12 primary focus of my efforts as a licensing professional. I  
13 joined Medtronic as assistant general counsel and assistant  
14 secretary responsible for their worldwide intellectual  
15 property matters, that included their patent program of  
16 obtaining patents, licensing patents, and related litigation.  
17 Medtronic is in the business of manufacturing medical  
18 devices, and particularly they're the world's largest  
19 manufacturer of implantable cardiac pacemakers.

20 Following my experience at Medtronic, I spent  
21 roughly four years as chief patent counsel at a company  
22 called Data General Corporation. Data General at that time  
23 was the world's second largest manufacturer of minicomputers.  
24 My responsibilities there as chief patent counsel included  
25 their worldwide patent acquisition program, including the

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1     licensing of patents and related to litigation. I entered  
2     into negotiations for license agreements with companies such  
3     as IBM, AT&T, RCA Corporation.

4             I was recruited in 1982 by Bally Manufacturing  
5     to chase Pac-Man clones, they were in the business of making  
6     the arcade-based video games that you probably have heard of,  
7     Pac-Man, Ms. Pac-Man, Space Invaders. My responsibility as  
8     associate general counsel for intellectual property and  
9     licensing included the oversight of their patent acquisition  
10    program, patent licensing matters that would come up, as well  
11    as the licensing of all of their characters relating to their  
12    merchandise licensing.

13            I was, in 1984, I joined Apple Computer to  
14    really develop their intellectual property program. I became  
15    associate general counsel for intellectual property and  
16    licensing there, built a department of approximately 25  
17    lawyers and paralegals and support staff to carry out their  
18    worldwide program of intellectual property that included the  
19    acquisition of patents, the licensing of patents, and related  
20    litigation. Of course Apple's business at the time I joined  
21    them was in computer systems, computer peripheral equipment,  
22    printers, hard drives and screens, all related types of  
23    equipment in the computer business.

24            I left Apple roughly six years later in 1990  
25    to work on a project for Intel Corporation. I was asked to

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1 work on a project that had to do with problems Intel was  
2 having with counterfeiting of some of its math coprocessor  
3 chips. What was happening was people were buying their  
4 6-megahertz math coprocessors, another form of  
5 microprocessor, sanding off the 6-megahertz and Intel  
6 markings and remarking them as 10-megahertz parts with the  
7 Intel trademarks and there's a price differential in the  
8 market of \$150. So I was asked to come in and pursue those  
9 companies through litigation and eventually we were able to  
10 resolve that and get most of those companies out of that  
11 counterfeiting business.

12 During my stay in that project for Intel,  
13 Intel was in a dispute with a company that you've heard  
14 mentioned here a few days ago called Advanced Micro Devices  
15 and they were in a dispute over some model designations  
16 called, referred to as 386 and 486. And since I was advising  
17 the company on trademark matters, it occurred to me that it  
18 might be very useful for Intel to really make a very  
19 important branding move in the market, and so one of the  
20 things that I did is I prepared a memorandum to the general,  
21 vice president general counsel at Intel suggesting that maybe  
22 Intel should approach its customers that made personal  
23 computers that used Intel microprocessors such as Compaq,  
24 Hewlett-Packard and other companies that made personal  
25 computers, to require that they put Intel on the outside of

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1 their boxes so that the customer would know that when they  
2 were buying a Compaq or Hewlett-Packard personal computer  
3 that it had a genuine Intel chip inside. About six months  
4 after I finished the project, in fact Intel adopted the  
5 notion of branding their customers' products with their logo.

6 I, about the time I was finishing the project  
7 at Intel, I was approached by National Semiconductor, they  
8 were very interested in licensing their patent portfolio.  
9 They owned a portfolio that comprised about 1500 issued  
10 United States patents and they had never entered into license  
11 agreements with any of the Korean or Japanese large  
12 semiconductor manufacturers. So I joined them and as vice  
13 president and associate general counsel for intellectual  
14 property and licensing, and they had already been discussing  
15 licensing with several companies but had not gotten very far.  
16 During my tenure there, we were able to conclude license  
17 agreements on their patents with most of the major Japanese  
18 and Korean semiconductor companies and were able to bring in  
19 roughly 200 million -- \$250 million in licensing royalties  
20 under those license agreements. And of course that was back  
21 in 1991, '92 time frame.

22 Following National, I've continued to be  
23 involved in licensing business. I founded a software company  
24 that I comanaged for approximately nine years in which we  
25 were involved in the acquisition of patents, licensing of

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1 patents, and licensing of large software systems to -- ended  
2 up with about 100 Fortune 1000 customers.

3 Following that, I was asked to set up a  
4 licensing business unit for a company called Symyx  
5 Technologies. Symyx is in the business of making  
6 high-throughput technical experimentation system. These are  
7 very large computerized systems that conduct, can conduct a  
8 thousand experiments in a day compared to a bench scientist's  
9 ability to conduct one experiment in an eight-hour day. And  
10 so I did join them and set up their licensing business unit.

11 And then following my period with them, I set  
12 up my own consulting practice and around 19 -- 2003, and have  
13 been involved in advising companies on their intellectual  
14 property strategies, licensing of patents and litigation  
15 support, what I'm doing here today.

16 Q Mr. Rappaport, other than the positions you've  
17 held, various licensing jobs at companies, do you have other  
18 licensing experience? Slide 4, please.

19 A Yes, I do. I, in -- during the time I was at  
20 Apple Computer, I was appointed by three United States  
21 secretaries of commerce and two United States trade  
22 representatives to serve on a U.S. government advisory  
23 committee, advising our government on trade-related aspects  
24 of intellectual property rights, and I served on that  
25 committee from 1987 through 1985 -- 1995. And that led to

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1 the U.S. entering into several international treaties that  
2 included provisions related to intellectual property rights  
3 and licensing of intellectual property rights.

4 I've also been certified as a licensing  
5 professional by an independent organization known as  
6 Certified Licensing Professionals, Inc.

7 I also, during my time with Aurigin Systems, a  
8 company I cofounded, am a coinventor on 18 issued United  
9 States patents.

10 And finally, during the course of my career  
11 I've published and presented roughly 60 papers relating to  
12 patents and licensing.

13 Q Mr. Rappaport, could you briefly summarize for  
14 the jury the types of technologies in which you've been  
15 involved in licensing capacity?

16 A Yes.

17 THE COURT: I think we've seen a lot of his  
18 work with the semiconductor industry.

19 MR. ANDERSON: Sure, your Honor.

20 THE COURT: So maybe we can move on to  
21 Mr. Rappaport's contribution to our trial here.

22 MR. ANDERSON: All right.

23 Q Mr. Rappaport, without telling the jury any of  
24 the opinions you may have formed, have you asked, been asked  
25 to provide opinions in this matter?

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1 A Yes, I have.

2 Q And have you formed opinions in this matter?

3 A Yes, I have.

4 Q And what are the materials that you have  
5 analyzed in forming your opinions in this matter?

6 A I was provided a significant number of  
7 documents that Hewlett-Packard has produced in this case as  
8 well as publicly available documents. I have conducted my  
9 own research in looking at these matters, and again,  
10 understanding that I have been asked to look at some of these  
11 issues from the perspective of a licensing professional  
12 involved in setting up a hypothetical licensing negotiation  
13 that would have taken place between Cornell and  
14 Hewlett-Packard to determine a reasonable royalty.

15 MR. ANDERSON: Your Honor, we would move to  
16 qualify Mr. Rappaport as an expert on the practices, customs  
17 and standards of intellectual property licensing.

18 THE COURT: Is -- do you have a need for voir  
19 dire, Mr. Cunningham?

20 MR. CUNNINGHAM: No objection, your Honor.

21 THE COURT: Mr. Rappaport is welcome to give  
22 his opinions.

23 Q Could you briefly summarize for the jury your  
24 opinions in this matter. If we could have slide 7, please.

25 A Yes. I'd like to point out again that I'm

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1 approaching this from the perspective of a licensing  
2 professional, customs, standards, and practices used in a  
3 hypothetical licensing negotiation that would have occurred  
4 between Cornell and HP to arrive at reasonable royalty. And  
5 I have looked at two fundamental areas in arriving at my  
6 opinions. One of those relates to what the appropriate  
7 royalty base should be from a licensing professional's  
8 perspective, as well as how the prominence of Dr. Torng's  
9 breakthrough invention would have played a significant role  
10 in the hypothetical licensing negotiation.

11 Q Why don't we turn to that first opinion,  
12 slide 9, please. Could you explain further the opinions you  
13 formed concerning the royalty base?

14 A Yes. There are two aspects that I looked at  
15 from a broad perspective, as a licensing professional. The  
16 first one is that it's clear from the evidence that I've  
17 reviewed, that you've all heard here, that HP has clearly  
18 used Dr. Torng's invention to sell servers and workstations.  
19 And the second overview is again from a licensing  
20 professional's viewpoint, in my opinion, Hewlett-Packard  
21 needed a license under Dr. Torng's patent in order to be able  
22 to sell servers and workstations.

23 Q Let's talk about that first, use. Go to the  
24 next slide. Why would you as a licensing professional look  
25 at the use of the invention?



1           A       Generally in this kind of negotiation, have  
2       you to look to a real world transaction as to how the  
3       invention is being utilized. In this case we've all heard a  
4       lot of testimony about the fact that Dr. Torng's invention  
5       was used with the sale by Hewlett-Packard of its servers and  
6       workstations.

7                       Now, you've also heard some discussion that  
8       there could be a view of looking at other -- parsing, so to  
9       speak, the system down into other parts. The difficulty when  
10      you begin to do that is in a hypothetical licensing  
11      negotiation, the parties may have a very difficult time on  
12      agreeing on what the value or pricing of that particular  
13      component should be. Example, the company may sell the  
14      component inside its own organization, have transfer pricing,  
15      and it may do so and set a given price for a number of  
16      reasons, not necessarily having to do with the true value of  
17      that particular item or component, but because it's trying to  
18      take profitability in one country, or another country.

19                    So it's most practical in a licensing  
20      negotiation such as the one we're considering here to look at  
21      a real world transaction. In this case, Hewlett-Packard,  
22      being a public company, reports on its sales of the products  
23      it sells, which in this case are predominantly servers and  
24      workstations, and those are public record numbers. And so  
25      from a licensing professional's perspective, the item that

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1 would provide the least area of dispute in determining a  
2 royalty base would be to look at the fact that  
3 Hewlett-Packard is using the invention in the sale of the  
4 servers and workstations, and those numbers are readily  
5 available and there's really no basis for disagreement among  
6 the parties for licensing negotiation over those numbers.

7 Q Other than your review of the documentation  
8 that we've seen in this case so far on HP's use of  
9 Dr. Torng's invention, have you reviewed any other materials  
10 that would indicate to you that the parties would look to  
11 systems as opposed to components in the royalty base?

12 A Yes, I have.

13 Q Next slide.

14 A Although it appears that Hewlett-Packard did  
15 not produce many of its license agreements, there is one that  
16 was produced, we see on this slide, that came to my  
17 attention, and I think this agreement is particularly  
18 relevant to our current situation, because this is an  
19 agreement, a license agreement entered into 2006 by  
20 Hewlett-Packard, with a company that owned a handful of  
21 patents covering microprocessors of technology. And as you  
22 see in this agreement, it was agreed that HP would pay a  
23 running royalty on the sale, and I'll refer you to the last  
24 highlighted section of this slide, it says that, "The  
25 licensed product shall be a complete, ready to use, final,

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1 end-user product," and we know in this case what HP's  
2 products that they have sold using Dr. Torng's invention are.

3 So this agreement, seems to me, is very  
4 relevant to the kind of situation we're dealing with here.

5 Q Why is it relevant?

6 A Well, because here we're faced with  
7 Dr. Torng's invention relating to improving performance in a  
8 microprocessor which is employed to run a complete server and  
9 workstation system. And in this license agreement with,  
10 involving what was referred to as the MMP patents, these were  
11 also patents that related specifically to microprocessors,  
12 but the parties agreed that the license, royalty base would  
13 be based on the sale of the end user products being sold by  
14 Hewlett-Packard.

15 Q Now did HP actually pay the running royalty  
16 set forth here?

17 A As it turns out, they did not. This agreement  
18 included an appendix that provided Hewlett-Packard with an  
19 option to opt out of the running royalty and to pay a fixed  
20 payment to the licensor.

21 Q Is that uncommon in licensing?

22 A No, that's not uncommon, that is something  
23 that is done and --

24 Q Why is something like that made available by  
25 licensors and licensees in your experience?

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1           A     Well, one of the things that happens when a  
2     licensor approaches a company such as Hewlett-Packard, big  
3     company, and you're looking to establish a foothold in the  
4     market with your licensing program, HP being a large company,  
5     there's a great incentive to find a way to reach agreement  
6     with a company like Hewlett-Packard, and come away with this  
7     kind of agreement that we're going to pay them 7.2 percent  
8     royalty on the sale of computers. But at the same time to,  
9     on the back end, through this option, give HP a right to buy  
10    out and pay a paid-up lump sum for the license. And the  
11    reason that's of such significance to the licensor is the  
12    licensor then goes out to the other companies that may be  
13    infringing or that require licenses under its patents and  
14    says, look, Hewlett-Packard has agreed to pay me 7.2 percent  
15    running royalties on the sale of their computers. And so I'm  
16    looking for you to pay me on the sale of your computers. So  
17    this is a real leveraging tool for the licensor and they're  
18    generally willing to give the first licensee in the door a  
19    significant break on the royalties being paid. So this is  
20    commonly done in this kind of circumstance.

21           Q     If we could turn to the second factor you've  
22    listed.

23           A     Yes.

24           Q     Could you please describe to the jury why, as  
25    the licensing professional, you're looking at this factor?

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1           A     Well, I think we've seen a lot of evidence  
2     presented by Dr. Smith, Dr. Stewart, about the fact that  
3     Hewlett-Packard was in fact using Dr. Torng's invention in  
4     conjunction with their sale of servers and workstations. And  
5     so from a licensing professional's perspective, it seems very  
6     apparent to me that Hewlett-Packard needed a license under  
7     Dr. Torng's patent, from a perspective of you wouldn't want  
8     to have your product in the market without having the  
9     greatest possible performance capabilities. And so this  
10    would have been a serious consideration, of wanting to be  
11    licensed and not have an infringement problem when you're  
12    selling a product that's going to continue to give you a  
13    competitive advantage of the sort that we've heard testimony  
14    about in the last few days.

15           Q     Other than the testimony by Dr. Smith and  
16    Dr. Stewart, without going into great detail, have you relied  
17    on other materials reviewed in this case?

18           A     Yes, there are other materials, there's one I  
19    wanted to call to your attention, there is an article  
20    published, well, yeah, this is an article that appeared in a  
21    publication called *Business Wire*, it's a trade magazine, and  
22    I want to point out there that here's this publication making  
23    the statement that the Hewlett-Packard PA-8000-based systems  
24    have 40 percent faster capability than the nearest  
25    competitor. And then it goes on to say that intelligent

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1 execution, and the other feature allowed superscalar  
2 performance levels unmatched by other vendors. And if you  
3 recall the superscalar performance, meaning the ability to  
4 push through four instructions per clock cycle, and certainly  
5 the performance issue is one that you've heard a lot about,  
6 and from a licensing professional's perspective in the  
7 licensing hypothetical negotiation, this would be a very  
8 significant factor to look at.

9 Q Mr. Rappaport, I'd like to move on to your  
10 final opinion in this matter. Slide 25, please. Can you  
11 please describe this opinion to the jury.

12 A Yes. This is again part of the second part of  
13 my opinion which is the prominence and technological  
14 achievement of Dr. Torng's breakthrough invention in my  
15 opinion would have played a very significant role in the  
16 hypothetical licensing negotiation.

17 Q In this next slide, put in fundamental patent,  
18 what is the significance of this in your opinion?

19 A Well, let me say that typically what's done in  
20 an organization, and we did this, for example, at National  
21 Semiconductor and other companies I worked for, we would  
22 create what's called the proud list of patents. And the  
23 reason for calling it a proud list is that you cull through  
24 your patent portfolio, for National it was 1500 issued U.S.  
25 patents, and usually you find that, and in National's case we

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1 found about 10 to 12 of the whole 1500 patents that we  
2 believed had real economic value. And the licensing program  
3 we carried out in which we were able to bring in \$250 million  
4 in licensing royalties was really centered around those 10 to  
5 12 patents so, creating a proud list. And Cornell, look to  
6 their website, has its own proud list of patents that it's  
7 obtained over the years. I think they own somewhere in the  
8 vicinity of 1100 patents, as I recall, and Dr. Torng's patent  
9 is one of the few handful of patents that appears on their  
10 proud list.

11 Q So how did you go about, how do you go about  
12 as a licensing professional identifying those patents that  
13 will go into your licensing portfolio?

14 A Well, first thing as a licensing professional  
15 is I would want to know is is the patented invention being  
16 used in commercially valuable products. And I think clearly  
17 we've seen the testimony from Dr. Smith, from Dr. Stewart,  
18 that we have that situation here. Dr. Torng's invention has  
19 been used in HP's servers and workstations.

20 Q What's the next fact you consider?

21 A The next item that the licensing professional  
22 would look to would be the importance and the success of  
23 those commercially valuable products. And again, we have  
24 seen I think in this case from what has been presented and  
25 certainly the evidence that I've reviewed, that from a

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1 licensing perspective, Dr. Torng's invention that helped  
2 create the performance capabilities that HP was able to  
3 deliver in their servers and workstations is where the rubber  
4 really meets the road in this case.

5 Q Are you offering an opinion that the Torng  
6 patent is infringed by HP's systems and processors?

7 A Well, one of the things about a hypothetical  
8 negotiation, and I think this got mentioned, but the parties  
9 must assume that the patent is valid, enforceable, and being  
10 infringed, so in the hypothetical negotiation that the  
11 licensing professional must address, those issues are off the  
12 table for discussion. They're assumed that those things are  
13 all there, and so we're assuming for purposes of this  
14 discussion that HP is indeed infringing upon Dr. Torng's  
15 patent.

16 Q Mr. Rappaport, I'd like to move to the third  
17 thing you've listed here, is the patent recognized within the  
18 industry. Can you give us an example of such information  
19 that you would rely on as a licensing professional?

20 A Well, for example, I may be looking at a  
21 patent that someone has asked me to look at from the point of  
22 view, we're interested in licensing this patent out to  
23 people, companies that we believe are using this patent,  
24 infringing this patent, need a license. And in looking at  
25 that question, one of the things that I look to is who is



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1 citing this patent. And by citing a patent, it was a  
2 question of is the organization that owns the patent citing  
3 its own patent, meaning is it filing improvements which are  
4 citing its own fundamental invention. And then I would want  
5 to look at, well, who else is citing this patent in their  
6 work, and how many others are citing this patent in their  
7 work. And having the ability to look at this information  
8 becomes very valuable in conducting the licensing  
9 negotiation.

10 Q Have you examined whether there's any  
11 citations to Dr. Torng's patents?

12 MR. CUNNINGHAM: Your Honor.

13 THE COURT: Yes.

14 MR. CUNNINGHAM: At this point we renew our  
15 objection as we stated in our motion in limine with regard to  
16 this topic, the citations.

17 THE COURT: You may proceed, Mr. Anderson.

18 MR. ANDERSON: Thank you.

19 Q Have you done any investigation as to the  
20 citation of Dr. Torng's patent?

21 A Yes, I have.

22 Q And in particular, could we have the next  
23 slide, can you briefly describe what you found?

24 A This was a published article that I found, it  
25 was an international study that was published in 2005, I

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1 believe you saw this slide in a more abbreviated form  
2 yesterday, and what this is is a study that was done of  
3 almost 77,000 issued United States patents, all related to  
4 the computer field, and the reason that you see the number 7  
5 highlighted is that that item, it says Cornell University and  
6 it lists patent 48,071,115 which is the very '115 patent that  
7 we're considering in this case, was considered by the people  
8 that did this study, their findings by mathematical  
9 calculations show that Dr. Torng's patent was the seventh  
10 most cited patent of the 77,000 patents in the study.

11 Q Do you know where the data comes from to do a  
12 study?

13 A Yes.

14 Q What kind of data is it?

15 A This information is readily available on  
16 databases you find online, number, patent office, there's a  
17 website called Free Patents Online and you look up a  
18 particular patent and there's a area that you click on and it  
19 brings up the complete citation list of all the patents  
20 relating to that particular patent.

21 Q So this is based on publicly available  
22 information?

23 A Oh, absolutely.

24 MR. ANDERSON: No further questions, your  
25 Honor.

Irving Rappaport - Cross by Mr. Cunningham

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1 THE COURT: Thank you. Mr. Cunningham, care  
2 to inquire?

3 MR. CUNNINGHAM: Thank you, your Honor.

4 CROSS-EXAMINATION BY MR. CUNNINGHAM:

5 Q Good afternoon, sir. We've met before, I  
6 think.

7 A Yes, we have.

8 Q Hope you're still well. Just have a couple of  
9 topics here. First of all, the -- you said that one of your  
10 opinions was that the prominence ask and technical  
11 achievement of Dr. Torng's breakthrough invention would have  
12 significantly influenced the hypothetical negotiation,  
13 remember that, sir?

14 A Yes.

15 Q As to the technical importance of the '115  
16 patent, you're relying solely on Dr. Smith's opinions, right?

17 A And all the other materials that we've seen  
18 and I've reviewed, all the internal documents that we've seen  
19 from Hewlett-Packard, press releases, publications, such as  
20 the *Business Wire*, yes, all of those materials.

21 Q But you're not relying on your own experience  
22 as a technical person in giving that opinion, correct?

23 A No, I'm not here for that purpose.

24 Q Thank you. Now let's talk briefly about this  
25 MMP portfolio license that you mentioned. You first said HP

Irving Rappaport - Cross by Mr. Cunningham

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1 agreed in the MMP portfolio license to pay a 7.2 percent  
2 running royalty, right?

3 A That's -- as I recall in the agreement, yes.

4 Q Okay. And then we talked about an addendum  
5 that actually HP paid a lump sum payment, right?

6 A That's correct.

7 Q How much was that?

8 A As I best recollect, I believe the lump sum  
9 that was agreed to was somewhere around \$69 million.

10 Q Why don't we pull up that exhibit, it's P523,  
11 please. All right. First of all, let's just stop there.  
12 It's called MMP portfolio license agreement, do you see that?  
13 Right at the top. You probably have a binder, too.

14 A Yes, I do see that.

15 Q We'll get you a binder, too, I apologize, sir.

16 A Is this -- oh, okay.

17 Q It's coming.

18 MS. PENNING: May I approach the witness, your  
19 Honor.

20 THE COURT: You may.

21 A What page, sir?

22 Q It's the very front, oh, it's P523, it should  
23 be towards the back. First page.

24 A First page I have is my deposition.

25 Q Just look for the tab P523.

Irving Rappaport - Cross by Mr. Cunningham

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1 A E5, did you say?

2 Q P, P as in Peter.

3 A I don't seem to have it, that tab, I've got  
4 all -- oh, wait a minute, there's a P98. That's the only P  
5 tab I've got there.

6 Q Is there a D228 in there? Both sides have got  
7 the exhibit on their list, so look for D228.

8 A No, I don't see that tab either. Maybe this  
9 isn't the right book.

10 Q It's in the binder that you were given first,  
11 sorry about that. The one Cornell gave to you.

12 A This one over here?

13 Q Yes.

14 A Okay. Give me that tab again.

15 Q P523.

16 A Well, this is Marion Stewart's binder.

17 Q You want to just look at it on the screen,  
18 sir, would that be --

19 A Sure, I mean I don't see that tab here.

20 Q Do you know what MMP stands for?

21 A Yes. As I recall, it's the Moore  
22 Microprocessor Patents, I think the inventor is a gentleman  
23 by the name of Moore.

24 Q Charles Moore, right?

25 A Yes.

Irving Rappaport - Cross by Mr. Cunningham

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1 Q You've heard of this set of patents before, I  
2 assume?

3 A Yes, I actually have.

4 Q It's a fairly significant set of patents in  
5 the licensing industry?

6 A I don't know that I've looked at them to that  
7 extent.

8 Q Do you know approximately how many companies  
9 have taken a license to this set of patents, sir?

10 A No, I don't at this point.

11 Q Do you understand that Intel and AMD have both  
12 taken licenses to this set of patents?

13 A The only company that I'm aware of is  
14 Hewlett-Packard because I looked and reviewed this particular  
15 agreement of Hewlett-Packard's. I haven't reviewed other  
16 agreements that involve this set of patents.

17 Q Okay. So in trying to gauge the relative  
18 value of this particular set of patents to Hewlett-Packard,  
19 you didn't investigate what other companies might have taken  
20 licenses?

21 A No, I did not.

22 Q All right. If I told you that more than 20  
23 companies had taken licenses to the MMP portfolio, would that  
24 surprise you?

25 MR. ANDERSON: Objection, your Honor, that's

1 not in evidence.

2 A Actually --

3 THE COURT: You can explain.

4 A -- it would.

5 Q Okay. How many companies have taken licenses  
6 to the '115 patent, sir?

7 A Well, the only license that I'm aware of is  
8 the Intel agreement.

9 Q Okay. And that's in 20 years since the patent  
10 issued, correct, nearly 20 years?

11 A As far as I'm aware.

12 Q So there's one license to Intel, correct?

13 A That's all I'm aware of.

14 Q And that's not something, that's not a license  
15 that you're considering in your analysis, that's right?

16 A No, I did not.

17 Q And you're aware that HP at least contends  
18 that there's a license to IBM to the '115 patent?

19 A I'm aware of that.

20 Q You're not considering that license either,  
21 are you?

22 A No.

23 Q Okay. But you are considering MMP license so  
24 let's talk about that. You read this license?

25 A Yes.

Irving Rappaport - Cross by Mr. Cunningham

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1 Q And you understood the terms?

2 A Yes.

3 Q Did you understand what types of HP products  
4 might be covered by the MMP portfolio?

5 A Yes. As I recall under the license product  
6 provision, it talked about consumer end products and  
7 commercial end products and I think in the slide I refer to  
8 it talked about the license product as being an end user  
9 final product.

10 Q Okay. So it wasn't just servers and  
11 workstations, because those are commercial products, right?

12 A That's right.

13 Q So it was also desktops, notebooks, printers,  
14 cameras, right?

15 A I mean it didn't specify those, but I would  
16 assume that it included those products as well.

17 Q Right. So nearly every product HP sells are  
18 covered by, potentially covered by the Moore microprocessor  
19 patent portfolio, correct?

20 A If you say so, I would take your word, again,  
21 I haven't looked at that issue specifically.

22 Q All right. Well, let's try and figure out  
23 what HP actually paid for this portfolio of patents. Why  
24 don't we turn to page 19, addendum G, please. Now if you'll  
25 focus on paragraph 1 and 1.1, please. It says purchase price



Irving Rappaport - Cross by Mr. Cunningham

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1 for this lump sum addendum shall be \$66,320,000, correct?

2 A I stand corrected on the 69 million, somehow  
3 that number --

4 Q But that's what you meant, all right, I  
5 understand.

6 A That's the total number.

7 Q And it says payable in the form of cash and  
8 credits as follows. \$26,400,000 in the form of cash, do you  
9 see that?

10 A Yes, I do.

11 Q That's the amount of money that HP actually  
12 paid for the Moore processor portfolio, correct?

13 A At the time of signing this option, yes.

14 Q Why don't we go to paragraph 2 down below  
15 that. Payment of cash portion of the purchase price and  
16 receipt thereof shall constitute complete and full  
17 satisfaction of all obligations under section 4. You see  
18 that, sir?

19 A Yes, I do.

20 Q Does that help you to understand that the  
21 \$26.4 million payment was the only payment HP made under this  
22 agreement?

23 A Well, that's not the case. It turns out  
24 there's another provision on the same page, I believe, or  
25 maybe the next page, that talks about earned credits that HP

1 would earn, and I think that was a number somewhere around  
2 \$39 million that as the Moore owner licensed other parties,  
3 to the extent that they recovered \$39 million,  
4 Hewlett-Packard would obtain a credit for that \$39 million.  
5 To the extent that they were unable to recover the total  
6 \$39 million, it's my understanding that Hewlett-Packard would  
7 have then been required to pay those moneys in the absence of  
8 fully earning those credits.

9 Q So where it says complete and full  
10 satisfaction of all obligations, all payment obligations,  
11 your understanding is that's not right, that's not what that  
12 means?

13 A Well, that means at the time of signing, the  
14 \$26 million, but there is additional language which if you  
15 would bring up, we can let everybody see, that talks about  
16 the earned credit of an additional \$39 million.

17 Q Sir, are you aware of any additional moneys  
18 changing hands between the owners of the MMP portfolio and HP  
19 under this agreement?

20 A I have no way of knowing that. It would be  
21 private information, but there is a clause that calls for  
22 this -- these earned credits, which if you bring up, we could  
23 allow everybody to see.

24 Q Sir, your counsel will have a chance to  
25 question you. Let's look at addendum B on page 13, please.

Irving Rappaport - Cross by Mr. Cunningham

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1 See what HP paid for. Sir, this is a portfolio license, is  
2 it not?

3 A That's correct.

4 Q It is not a single patent license of the type  
5 we'd be talking about between Cornell and HP for the '115,  
6 correct?

7 A They're -- this agreement includes, it looks  
8 like, a total of seven U.S. patents. However, I don't  
9 believe that any of these patents rise to the level of the  
10 breakthrough nature of Dr. Torng's invention.

11 Q I understand that's your opinion, sir, I'm  
12 simply asking is it a portfolio license.

13 A Yes, of the seven patents.

14 Q So there are seven U.S. patents, right?

15 A Yes.

16 Q There's one pending application listed here?

17 A That's right.

18 Q There are at least three European patents that  
19 I see, correct?

20 A Yes, those would correspond to the  
21 corresponding U.S. patents.

22 Q And two Japanese applications, correct?

23 A Again, corresponding to the same U.S. patents.

24 Q Did you confirm that?

25 A Not in detail, but usually, that would be the

1 case. It would be surprising if these patents were unrelated  
2 to the U.S. patents.

3 Q Well, did you review these patents, sir?

4 A No, I did not.

5 Q Did you review the applications?

6 A No.

7 Q So by my count there are at least 12 or 13  
8 different pieces of intellectual property licensed to HP  
9 under these -- under this license. Do you agree?

10 A Yes.

11 Q So by rough math, that's about \$2 million per  
12 piece of intellectual property, you just divide the 26 by 12  
13 or 13?

14 A Well, what about the other \$39 million?

15 Q Well --

16 A You tell me the math. I mean, my position is  
17 the total fee payable by cash and credits was \$69 million, so  
18 if you want to divide the 13 into that, then I would probably  
19 agree with your math, but I don't necessarily agree with  
20 dividing that number into 26 million.

21 Q We can agree, however, sir, that HP is under  
22 no obligation to pay any running royalty under this  
23 agreement, correct?

24 A No, I don't agree with that. What we have is  
25 an agreement in which Hewlett-Packard did agree in writing

1 and execute an agreement in which they agreed to pay  
2 7.2 percent running royalty on the sale of their commercial  
3 products.

4 Q Let's go back to addendum G then. Just blow  
5 up the top paragraph please. G. Just the top paragraph.  
6 Now you understand that this was an attachment to the  
7 agreement, right?

8 A I would characterize this as an option that  
9 Hewlett-Packard had four days in which to exercise after the  
10 original document was signed specifying the running royalty  
11 agreement.

12 Q Okay. And this was separately executed  
13 between the parties, correct?

14 A Well, I believe it was part of the agreement,  
15 it's an addendum to the agreement, but as I recall there's a  
16 four-day window in which Hewlett-Packard was allowed to  
17 exercise its option to turn the running royalty into a lump  
18 sum payment as provided in this addendum.

19 Q And the addendum G says, "Further, to the  
20 extent that it is determined that there's a conflict between  
21 this addendum and the license agreement, this addendum  
22 supersedes the license agreement," do you see that?

23 A Yes, I do.

24 Q You understand what supersedes means?

25 A Yes, in other words, four days later, they

Irving Rappaport - Redirect by Mr. Anderson

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1 changed the agreement.

2 Q It replaced the agreement, did it not?

3 A Yes, it did, but that would not necessarily  
4 be --

5 MR. CUNNINGHAM: I have nothing further.

6 A -- be known by other parties.

7 MR. CUNNINGHAM: Nothing further, thank you.

8 (3:26 p.m.)

9 THE COURT: Mr. Anderson.

10 REDIRECT EXAMINATION BY MR. ANDERSON:

11 Q Mr. Rappaport, just a question following up  
12 regarding the MMP situation. Is the circumstances you find  
13 yourself in hypothetical negotiation in this case one in  
14 which you would think that the lump sum which would be  
15 available as an option to the licensee?

16 A No, I don't think that's applicable at all in  
17 this case.

18 Q Why is it?

19 A Well, again, this lump sum option was agreed  
20 upon and it was a benefit to both parties. The licensor, the  
21 owners of the MMP patents, saw this as beneficial to sign  
22 this agreement with Hewlett-Packard that allowed them to go  
23 out and say to other potential licensees, Hewlett-Packard  
24 signed this agreement, look at this agreement, they're  
25 agreeing to pay us 7.2 percent running royalties on the sale

1 of their commercial products. It's not likely that any  
2 licensees would have the benefit of seeing the addendum that  
3 was an option exercised by Hewlett-Packard a few days after  
4 the full agreement was signed.

5 Q Mr. Rappaport, so that's why Hewlett-Packard  
6 and MMP may have agreed or in your experience why parties may  
7 agree to such agreements in licensing agreements; why  
8 wouldn't it be applicable here in the hypothetical  
9 negotiation?

10 A Well, Cornell would have not been interested  
11 in this kind of an agreement, they would be looking for a  
12 running royalty on the use of Dr. Torng's invention.

13 Q Well, in the benefits, you discussed benefits,  
14 Mr. Rappaport. Would Cornell have received a benefit of  
15 having an early license in the hypothetical negotiation?

16 A It -- are you suggesting that the agreement  
17 would have been drafted this way between Cornell --

18 Q That's my question.

19 A -- and Hewlett-Packard?

20 Q That's my question.

21 A I suppose if the lump sum was large enough to  
22 satisfy Cornell, and they had a belief that they could based  
23 on that then bootstrap such an agreement into licensing other  
24 companies, then possibly they might have considered it. As  
25 far as I know, there was no such negotiation, no such offer

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1 ever made by either side as far as I'm aware, in the  
2 discussions between Cornell and Hewlett-Packard.

3 MR. ANDERSON: No further questions, your  
4 Honor.

5 THE COURT: Anything further, Mr. Cunningham?

6 MR. CUNNINGHAM: Your Honor, I think we may  
7 want to go to side bar before I question the witness further.

8 (A discussion was held at side bar off the  
9 record.)

10 MR. CUNNINGHAM: Your Honor, we have no  
11 further questions.

12 THE COURT: No further, you may step down.

13 (Whereupon the witness was excused, 3:30 p.m.)

14 THE COURT: Mr. Poplawski.

15 MR. POPLAWSKI: Your Honor, I believe that  
16 that concludes plaintiff's direct case in chief.

17 THE COURT: With the exception that I may  
18 allow you to bring somebody back if you decide to later on.

19 MR. POPLAWSKI: That's correct, and also that  
20 we had talked about earlier yesterday.

21 THE COURT: Yes.

22 MR. POPLAWSKI: And as a housekeeping point,  
23 we don't need to waste the jury's time with this but we have  
24 exhibits to formally get into the record.

25 THE COURT: We'll do all of that, so with the



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1 close subject to certain agreements with the court of  
2 Mr. Poplawski's case, we can turn to Mr. Allcock's case.

3 MR. ALLCOCK: We're ready to start, your  
4 Honor.

5 THE COURT: Then let me do one thing. Let's  
6 let my jury stand up for a second while we're calling the  
7 witness so we can all stretch. And then you can meantime be  
8 bringing your witness in.

9 MR. ALLCOCK: We are, and your Honor, I take  
10 it that we'll reserve motions.

11 THE COURT: Let's do that at the end of the  
12 day, shall we?

13 MR. ALLCOCK: At the end of the day is fine.

14 THE COURT: While we've got a little time,  
15 let's spend it with our witness and we'll hear motions --

16 MR. ALLCOCK: Or even at the charge conference  
17 would be fine, too.

18 THE COURT: However we want to do it. Are we  
19 ready, Mr. Allcock?

20 MR. ALLCOCK: We are, the witness is making  
21 his way.

22 THE COURT: Then let's call him forward.

23 (Pause in Proceedings.)

24 MR. ALLCOCK: Your Honor, we call Mr. Lesartre  
25 to the stand.

Gregg Lesartre - Direct by Mr. Allcock

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1 THE CLERK: Mr. Lesartre, could you please  
2 state your name for the court reporter and spell it.

3 THE WITNESS: Yes. Gregg Bernard Lesartre.  
4 L-e-s-a-r-t-r-e.

5 THE CLERK: Please raise your right hand.

6  
7 G R E G G L E S A R T R E , called as a  
8 witness and being duly sworn, testifies as follows:

9 MR. ALLCOCK: Ready, your Honor?

10 THE COURT: You may proceed.

11 (3:35 p.m.)

12 DIRECT EXAMINATION BY MR. ALLCOCK:

13 Q Good afternoon.

14 A Good afternoon.

15 Q Where do you live?

16 A I live in Fort Collins, Colorado.

17 Q Where do you currently work, sir?

18 A Yes, I work at HP in Fort Collins.

19 Q Can you give the ladies and gentlemen of the  
20 jury a brief rundown of your educational background, sir?

21 A So I went to college at Texas A&M University  
22 in College Station, Texas, receiving both a undergraduate  
23 degree there and a masters.

24 Q What are your degrees in?

25 A Electrical engineering, both undergraduate and

Gregg Lesartre - Direct by Mr. Allcock

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1 graduate.

2 Q Have you ever testified in court before?

3 A No.

4 Q What did you do after you graduated from  
5 school?

6 A After graduating from school, I interviewed  
7 and was hired by Hewlett-Packard up in Fort Collins where I  
8 am today.

9 Q Why did you consider HP as a place to work?

10 A Well, I actually interviewed in a number of  
11 places and aside from the opportunity to live in Colorado  
12 which was certainly a factor, I was also drawn there by the  
13 level of innovation and the opportunity I saw there to  
14 participate in the kind of work that I enjoy doing and to do  
15 useful work.

16 Q When did you start at HP about?

17 A 1984 in the summer.

18 Q What was your first job there?

19 A When I first started working for HP, I was  
20 working more as a circuit designer at the time, designing  
21 circuits that went on to the NS1 chipset, which was the first  
22 integrated precision architecture design that HP was doing.

23 Q I see. How long did you work as a circuit  
24 designer?

25 A I worked as a circuit designer, actually even

Gregg Lesartre - Direct by Mr. Allcock

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1 today I occasionally do, but as a primary role, I guess about  
2 the first five years or so of my career was in that field.

3 Q What did you do after that?

4 A So after we finished the NS1 chipset and  
5 started looking onward to other programs, I actually had the  
6 opportunity to work on the floating point controller for what  
7 was called the PCX processor which was actually a set of  
8 chips, and to develop the architectural mechanisms that  
9 allowed that to work as it needed to for that design.

10 Q You said the word architecture. With respect  
11 to computer chips, what is architecture?

12 A So we refer to both architecture and  
13 microarchitecture. Architecture usually means kind of a  
14 higher level architecture of the overall system, including  
15 things like what kind of instruction set that we use to feed  
16 the actual hardware in that it executes to generate  
17 responses, and then microarchitecture is more kind of the  
18 same idea but more the level of what actually goes into a  
19 particular chip design, usually to implement the higher level  
20 architecture. So really I said architecture but really my  
21 job function at that time was more the microarchitecture.

22 Q Okay. And how long did you spend on that  
23 task?

24 A So that was a good I guess two to three years  
25 worth of design on that program.

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1 Q Okay. Do you know a gentleman named John  
2 Lotz?

3 A Yes. John is actually, we hired in the same  
4 year, and his career at HP has been very similar to mine. So  
5 for years working together, you know, fresh out of school, he  
6 was actually part of the group of us that started together,  
7 came in as single engineers, worked hard together, went out  
8 after work to play together, and ultimately watched each  
9 other start to build a family.

10 Q Okay. After the last job, what did you do  
11 next at HP?

12 A So the work on the floating point controller  
13 basically led up until about the beginning of 1990, which is  
14 when I started working on the PA-8000, or what became the  
15 PA-8000 processor, PCX-U, and --

16 Q Okay.

17 A Yeah.

18 Q What was the existing processor, the PA-8000  
19 was going to replace something, right?

20 A Yes. So the processor was the PA-7200 as it  
21 was called externally, we had completely different names  
22 internally, but the PA-7200 was actually derived from --  
23 well, ultimately it came from PCX as well, it had some, some  
24 of the designs of that that was carried forward into that  
25 design which was actually done in California.

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1 Q Okay. What was the state of the PA-8000  
2 design when you started, how far along was it?

3 A So as I understood it, John had been active  
4 along with Darius Tanksalvala as a manager for a period of I  
5 think three or four months before the point I actually came  
6 on board the program.

7 Q So you got involved pretty much at the  
8 beginning of the project?

9 A Pretty much at the beginning, John and I joke,  
10 at the point I started he actually got pulled off for a brief  
11 stint, so in some sense we've each started, spent the same  
12 total amount of time on it.

13 Q How many people were involved with the project  
14 at the very start?

15 A At the very start it was a relatively small  
16 team, I think I mentioned John and myself and Darius. Not  
17 too long thereafter, we had Doug Hunt, Don Kipp, couple  
18 others that got involved as well as we had folks looking  
19 specifically at the processor technology and such but a small  
20 team overall.

21 Q Okay. What were you trying to do, what were  
22 you trying to design?

23 A So the nature of the business, at least at  
24 that time, was that the processor technology, clean room  
25 folks who were constantly improving their process, kept us

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1 moving forward to try to take advantage of their  
2 capabilities. So it was necessary to refresh our designs on  
3 a regular basis, because the circuits would get faster,  
4 because they allow us more transistors on each design that we  
5 wanted to take advantage of to make, you know, produce the  
6 best product that we could. So at that point, we knew we had  
7 new technology coming, we knew we had been reusing previous  
8 designs long enough that it was time to start a fresh design  
9 from a blank sheet of paper.

10 Q So was it a, you guys, engineers use the clean  
11 sheet design, was it that kind of a thing?

12 A Yes, it was clean sheet. We went back and  
13 considered all options rather than limiting ourselves to  
14 taking an existing design and looking for modifications we  
15 could make to improve that design.

16 Q And was one of the things you did, the design  
17 team, review some papers to get some ideas?

18 A Certainly. It is common to review published  
19 papers to just help generate thoughts on different ways you  
20 could approach problems.

21 Q Now we've heard a lot in this court, you  
22 haven't been here, about this Johnson thesis. Do you  
23 remember reviewing the Johnson thesis?

24 A I do not remember reviewing the Johnson thesis  
25 at that time, no.

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1           Q     Now you know we're here because HP is being  
2     sued by Cornell on the '115 patent. In the course of your  
3     work on the PA-8000, designing it, do you remember becoming  
4     ever aware of the '115 patent?

5           A     No, not while we were working on the design.

6           Q     Later on when Cornell raised claims, did you  
7     become aware of it?

8           A     Yes, of course at the point I knew there was a  
9     claim against us, I was aware of the patent.

10          Q     So what parts of the design of the PA-8000 did  
11     you work on at the beginning?

12          A     So at the beginning, I and John, we, and some  
13     of the other folks, we looked at specifically how we could  
14     control the issue of instructions, the intent being to re --  
15     well, to improve the overall performance and capability of  
16     the machine, using some of these techniques that we saw. The  
17     work I had done before in the floating point coprocessor, the  
18     controller for that, actually did have some aspects of  
19     allowing instructions to execute in their own time if you  
20     will, and so part of I guess my involvement was because I had  
21     some familiarity with that, looking for ways to apply that to  
22     the new design.

23          Q     So did you start work on this IRB, we've heard  
24     a lot about the IRB in here, did you start work on that?

25          A     I started work on that. Of course that's not



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1 what we called it at the time, it was something that  
2 developed over time as we considered options that we had  
3 available to us for implementation of our design.

4 Q And when you say we, who were the main folks  
5 on this project at that point, on that part of the project?

6 A At that point in time like I mentioned we had  
7 myself, John Lotz who you know not only helped with the ideas  
8 on how we could implement the logic but also did a lot of  
9 work on simulation to characterize some of the options we  
10 were considering as far as their relative merit. We had Doug  
11 Hunt who was looking at the fetch engine end primarily in  
12 terms of how we bring instructions into what ultimately  
13 became the IRB.

14 Q Okay. What were the problems you confronted  
15 with this new project?

16 A Well, so for the processor we were designing,  
17 what we realized is the processor was continuing to speed up  
18 relative to memory, and so it became critical to be able to  
19 feed data to the processor in the most efficient manner that  
20 we could. So we had caches, okay, the notion that the cache  
21 is you can pull memory, pull data from memory --

22 Q Let me stop you for a minute. We've heard  
23 that word cache used in here. Can you give us some common  
24 example of what a cache is with respect to computers?

25 A Yes. So perhaps an easy way to kind of

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1 visualize it, you know, you might go to the library to get  
2 data, right, you'd like to bring it home, you put it on your  
3 bookshelf so it's accessible to you. Well, that bookshelf is  
4 kind of like a cache, it's a place where the processor can  
5 put data where it's accessible, and then you can reference it  
6 frequently while you're using it and then when you're done,  
7 you'll eventually take it back to the library.

8 Q Okay. So I interrupted you, so you were in  
9 the middle of confronting some problems with respect to this  
10 IRB.

11 A Yes, so much of the challenge of maintaining a  
12 performance level with the designs that we were considering  
13 was that we needed to keep the processor fed with data  
14 because any time the data wasn't accessible and you had to  
15 wait, you're basically not making, not doing useful work.

16 Q Okay. So how long did you work on this before  
17 you came up with a design?

18 A Oh, before we came up with the design? I'm  
19 thinking before we really settled on what we were going to  
20 do, it was probably something on the order of a year and a  
21 half.

22 Q Did you do simulations?

23 A Yes, we did quite a number of simulations,  
24 looking at various schemes where we would schedule, build  
25 hardware, different structures that would attempt to solve

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1 these problems and through simulation evaluate which ones  
2 worked best.

3 Q And so you actually built some test chips or  
4 circuits to simulate?

5 A Well, we didn't physically build them, but we  
6 described them in a simulation language such that we could  
7 characterize how they would perform.

8 Q Was one of the problems you confronted  
9 something we've heard a lot about in here, dependencies?

10 A Yes.

11 Q Go ahead.

12 A I was just going to say dependencies is  
13 something pretty basic in terms of what you need to track  
14 when you're trying to execute multiple instructions.

15 Q We've heard a lot about dependencies in here.  
16 Let me show you DDX17, just so that everyone's on the same  
17 page for this conversation. Is that a simplified example of  
18 a dependency?

19 A Yes, I think this does demonstrate it. So  
20 what this is showing here is a sequence of four instructions,  
21 and if we look at the first two, for instance, we see that we  
22 have an add instruction adding two registers and putting it  
23 into register 3, and then the second instruction being  
24 another add that's using that result to generate its result.  
25 And so we would say then that the second instruction is

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1 dependent on the result of the first. It needs to wait  
2 basically until that first instruction has provided that  
3 result before it can proceed and calculate its own result.  
4 And then if we look further down this sequence we see the  
5 same kind of relationship between instruction 3 and  
6 instruction 4. Instruction 4 needs to wait for instruction 3  
7 to complete before it can calculate a result.

8 Q Okay. Now was this one of many problems that  
9 you were confronting with the IRB?

10 A Oh, yes. So operand dependencies is only one  
11 type of dependency, for instance. We were designing a  
12 processor for an existing architecture, and it came with  
13 requirements that other dependencies be tracked and so each  
14 of those kinds of issues had to be solved as well.

15 Q Okay. Now, were there a number of ways to  
16 deal with these dependencies that you were aware of?

17 A Yeah, there are different ways suggested in  
18 the literature, different ways that we came up with for  
19 handling the different dependency types in our own creative  
20 process.

21 Q Okay. Was one way that you were aware of that  
22 was commonly used was something called register renaming?

23 A Yes. Register renaming is something that  
24 was -- had been presented before in the literature, had been  
25 used before in some older machines before the day of

1 processor integration.

2 Q So can you explain to the ladies and gentlemen  
3 of the jury in words what register renaming is as you  
4 understood it?

5 A So register renaming, so going back to the  
6 example you have up on the screen there, that particular  
7 sequence, if you notice, you're using R3 in both the top two  
8 instructions and in the third and fourth instruction. But  
9 the fourth instruction really is not dependent on the first  
10 instruction for its result. It's replaced by instruction 3  
11 in the meantime and it really doesn't need to wait for that  
12 first one. So register renaming provides a way to separate  
13 those two cases so that the hardware can recognize that it's  
14 free to execute the third and fourth instructions without a  
15 dependency on the first and second.

16 Q Okay. Let's go to DDX18. Now DDX18 -- there  
17 it is.

18 A Okay. So this shows the simple sequence once  
19 again.

20 Q Okay.

21 A And here we see, just highlighting the fact  
22 that it's register 3, we recognize the dependencies.

23 Q And now what do you mean by renaming?

24 A So renaming is the notion that instead of  
25 referring to R3 in all of these cases, that gets confusing

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1 because it's the same R3, you rename your alternate register  
2 to something different, you allocate a resource on the  
3 processor that is an alternate register to put the result in.  
4 So register rename 3 as we put it here for the first two  
5 instructions and then register rename 4 can be used instead  
6 for instruction 3 producing result that instruction 4 will  
7 consume.

8 Q So if we think of these things like mailboxes  
9 that you can hold something in, is that a way that we can  
10 think about it?

11 A Yeah, that would be a reasonable way to think  
12 about it.

13 Q What you've just done is you've changed the  
14 mailbox?

15 A Yes. Yes.

16 Q And what does changing the address of the  
17 mailbox do to the dependency?

18 A Well, using the mailbox analogy you  
19 effectively avoid mixing mail, right, I mean you keep them  
20 separate.

21 Q And so what happens to the dependency?

22 A The dependency is isolated down now to the  
23 dependency that matters, the producer to the consumer.

24 Q Okay. So is that example that we just gave  
25 kind of the common renaming technique that you knew about?

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1           A     That is, yes, that is a common mechanism that  
2     I was aware of.

3           Q     Not new or anything?

4           A     Not new to the industry.

5           Q     So what did you and Mr. Lotz do then, what did  
6     you come up with?

7           A     So what we implemented is essentially a way to  
8     use this kind of capability in our design so if these four  
9     instructions are inserted into our IRB, the IRB then can  
10    discover these kinds of dependencies and as it does that,  
11    it's basically, it's looking at the result register related  
12    to the operand registers required and at the point, it  
13    recognizes a dependency, it will set a flag for  
14    instruction 2, for instance, so that instruction 2 knows it  
15    has a dependency on instruction 1. And furthermore, it will  
16    capture the pointer, the slot number or the entry in the IRB  
17    that will ultimately provide it with its data.

18          Q     Okay. That was a little complicated. Let's  
19    go to DDX47. Okay. So can we use this graphic to explain a  
20    new idea that you guys came up with?

21          A     Yes. So actually this can be used to explain  
22    essentially what I was just trying to convey. You start with  
23    apparent dependency on register 3 throughout. But in the  
24    process of inserting into the IRB, you recognize the  
25    dependencies that are the critical dependencies here.

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1           Q     Let me stop you there for a minute. I see  
2     we -- I see some orange or red things over on the right.  
3     What are those things?

4           A     Okay. So those orange boxes labeled here as  
5     slot numbers represents the location in which we will, we put  
6     our result in to make it available to subsequent  
7     instructions. So it's our equivalent to the rename register.

8           Q     I see. Was that a little different than the  
9     way it had been done previously?

10          A     It was slightly different in that the slot  
11     number is a fixed relationship to the IRB entry that is used  
12     for the instruction producing the result.

13          Q     I see. And so then what did you do with these  
14     dependencies?

15          A     So when we recognize these dependencies, we  
16     provide a pointer to the dependent instruction. So we  
17     recognize the dependency there, we set a flag, then that  
18     indicates there is a dependency.

19          Q     So added there, I need the result from slot 1?

20          A     We recognize we need the results from slot 1,  
21     we capture the fact that it is only slot 1 we care about, we  
22     set the flag so we know that we are dependent, and we'll do  
23     the same thing for instructions 3 and 4, we'll point  
24     instruction 4 to slot 3, and we'll set a flag there so it  
25     knows it's dependent on slot 3.



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1           Q     I see. So now what have we just done to the  
2 dependencies in this first little step of the process?

3           A     Well, we've separated them out, so we now can  
4 recognize easily that slot, or instruction 2 cares about the  
5 instruction in slot 1, and instruction 4 cares about the  
6 result in slot 3, and only for that result.

7           Q     Okay. Let's go to the next slide. Let me ask  
8 you a couple of more questions on how your particular  
9 renaming operation works. You indicated those orange blocks  
10 were a little different than the way it had been done before.  
11 Can you explain that?

12          A     So the primary difference is that rather than  
13 assigning an arbitrary register number as the rename  
14 register, as has been done in the past, it's directly  
15 associated instead with a given entry in the IRB. It does  
16 not have to be assigned, it's just understood that that's  
17 where you will put the result.

18          Q     And so how does that help, I'm showing the  
19 arrow going up to the slot you just referred to, how does  
20 that help the process?

21          A     Well, so it simplifies the allocation, we  
22 don't have to take extra time to do that, we're running this  
23 design at a very high frequency and so making things work at  
24 full speed is a challenge, so it helps in that sense. It  
25 also helps in the sense that now all we need to do is watch

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1 for the instruction in the slot we're dependent on to launch.  
2 And at the point we see it launch, we know then that the  
3 dependent instruction can launch in the next cycle.

4 Q Okay. You mentioned launch. Let's go to  
5 DDX50. Actually, move back. Pick one up. There we go. So  
6 what controls the launch of these instructions?

7 A So in our implementation, each one of these  
8 dependencies is tracked by a block we call Opfield6, just  
9 probably the row we ended up on, but at any rate it's the  
10 logic that performs much of this function that I've been  
11 describing. It produces as its primary output a signal that  
12 tells the rest of the slot whether there is a dependency that  
13 prevents it from considering launch or not.

14 Q Okay. And so is this flag a common  
15 engineering term?

16 A So the output is derived from a flag that we  
17 have within the block, and yeah, flag is a common term that  
18 you'll hear in parlance as, you know, among engineers talking  
19 about when you need to monitor a status.

20 Q What does it mean?

21 A Well, so in this case it indicates the fact  
22 that a condition has been observed and, you know, you set the  
23 flag as a way of remembering that that condition exists.

24 Q Okay. Let's go to the next. And so does that  
25 process kind of continue for whenever there's dependencies?

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1           A     Yes. We're constantly inserting new  
2 instructions into our IRB, the example here is four, but we  
3 can hold up to 56, so every cycle we can insert up to four  
4 more, and we're constantly doing this evaluation as new  
5 instructions come in to look for their dependencies.

6           Q     I see. Is a flag a counter?

7           A     No.

8           Q     Why not?

9           A     A flag indicates a status, a simple yes/no. A  
10 counter counts a number of events.

11          Q     Could I go to DDX51. So now can you kind of  
12 explain -- so by the way, did this design find its way into  
13 the IRB that you actually built?

14          A     Yeah, this is -- this is the -- what we  
15 implemented.

16          Q     How long did it take you to figure this out?

17          A     To figure this particular issue out, like I  
18 said, it took about a year and a half overall, we went  
19 through a number of iterations and ideas, and that was at the  
20 point that we understood I think the general overall design.  
21 But even after we had the architectural or the  
22 microarchitectural understanding of how this was going to  
23 work, you know, it took the physical teams working on how to  
24 actually implement the circuits and how to coerce the  
25 circuits to run at the speed we needed them to run. I'm

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1 thinking that was another year's worth of total effort to  
2 develop that part of the design.

3 Q Okay. I notice that there's a PA-8700 CPU or  
4 chip down there, and if you have good eyes you can see it  
5 says IRB in that little square. Is that where the IRB is on  
6 that chip?

7 A Yes. On the 8700, the IRB represented the  
8 portion of the control logic that performs this function that  
9 we're describing as well as the tracking of the other  
10 dependencies and other launch control that we needed to  
11 implement.

12 Q I see. Now, were there other issues that you  
13 needed to address in order to build, I'm not talking about  
14 the chip yet, were there other issues you needed to address  
15 to build just the IRB part of the chip?

16 A Oh, absolutely. So our architecture as  
17 originally designed was intended to optimize for a single  
18 issue in-order machine. You know, the architecture had been  
19 put together several years before and it didn't fully  
20 visualize what we'd be wanting to do in this time frame that  
21 we were implementing the PA-8000. So we needed to find  
22 solutions for the architecture to work with the aggressive  
23 approach that we wanted to take and still generate the  
24 correct answer.

25 Q Okay. Let's go to DDX45. Now this is the

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1 8700, did the PA-8000 look a little different than this?

2 A It looked different. So as I mentioned,  
3 process technology is constantly moving forward. The PA-8000  
4 was our first fresh design, our first blank sheet design, and  
5 then once we spent, you know, the five years it took to  
6 complete that design, we didn't want to just throw it away  
7 and start all over again, so we used that design and carried  
8 it forward and added capability to it based on what the  
9 process technology could provide for us over time.

10 Q You mentioned five years. How long did you  
11 work on the project to get the PA-8000 from conception to a  
12 chip?

13 A Well, so I mentioned I started in basically  
14 the beginning of 1990, taped release I think was in '95 and  
15 that's the point that we actually send the chip to a  
16 processing fab to make the part. And even beyond that  
17 there's time spent after we get the part back turning it on,  
18 making sure it works as expected, going back and debugging  
19 some things that maybe didn't work as we expected.

20 Q I see. And then how about on the follow-on,  
21 the 8100, 200, 300, 400, 500, 600, 700, how long did you work  
22 on those?

23 A So I continued to work on the PA-8000 family  
24 processors I believe until 2001.

25 Q A decade?

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1           A     A decade.

2           Q     Part time?

3           A     No, not part time. Now I sometimes still work  
4 on it part time, but in that time frame, no. It was full  
5 time.

6           Q     Okay. Now let's look at the IRB and let's  
7 look at the circuit that embodies what we just saw. Are you  
8 okay up there?

9           A     I'm okay. Small spill. You provided towels.

10          Q     You okay?

11          A     I'm fine.

12          Q     Let's go to -- well, how did the -- I'll just  
13 show you the exhibit. DDX78. We've heard about schematics  
14 in this case. Did you create schematics?

15          A     Generally speaking, I did not personally  
16 create schematics. We tended to do our early design in a  
17 simulation environment, what we describe as MADL, really just  
18 a coding language, especially for what we needed to do, but  
19 we could describe our major blocks, our major pieces of the  
20 design through this language and then simulate it together to  
21 show that it worked properly.

22          Q     I see. Is this a schematic of the actual  
23 chip?

24          A     This is a schematic of specifically a part of  
25 the op field we've mentioned.

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1 Q Op field, I think we've seen that here before.  
2 Can you explain what op field is?

3 A Well, so of course op as in op code field as  
4 in the portion of the IRB entry that was responsible for  
5 tracking the operand dependencies, and I think we mentioned  
6 it before, that this is the block that produces the go/no go  
7 signal for launch, as far as this particular kind of  
8 dependency is concerned.

9 Q Can you tell us what part of this circuitry  
10 does that go/no go?

11 A So if you look in the most upper right portion  
12 there, you'll see, yes, the box up there, produces what we  
13 call VALDEP signal.

14 Q Can you zoom in on that. Okay. So first let  
15 me ask you, what are we looking at? It looks like a square  
16 box on the -- well, kind of like, says VDB and then like a  
17 half open box and then I can't read it and then a half open  
18 box on the bottom; what is that thing that we're looking at?

19 A Okay, so those, that's actually showing you  
20 the transistors, it's really a way to perform NOR function in  
21 that.

22 THE COURT: Do you want to give him a pointer  
23 so -- I'm not sure I know where you're at.

24 MR. ALLCOCK: We'll give it a try.

25 A Actually that's good right there. So we have

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1 a clock that pulls up this signal every cycle, you have a  
2 clock here that's pulling up this every cycle, and then on  
3 the cycle, on the half of the cycle when the clock is not  
4 pulling it up, we can pull it down with this input here, and  
5 what this is really doing is just a way of communicating to  
6 the central block logic that's collecting up all these  
7 dependencies from the op fields as well as other blocks that  
8 track different dependencies to recognize when all of them  
9 say it's okay to launch.

10 Q I see. What is VALDEP, what is that?

11 A Valid dependency.

12 Q I see. Is this like a flag?

13 A Well, this is, yes, this does match what the  
14 internal flag is inside this block of logic, so if we can  
15 zoom out a little bit, I can show you where the flag is.

16 Q Okay, where do you want us to go?

17 A So -- I guess I have this pointer, I'm going  
18 to use it. So right here if you could capture from here up  
19 to the corner in a zoom.

20 Q So capture the --

21 A From here up to the corner here.

22 Q The other way.

23 A Okay. So what's shown there, well, what's  
24 showing up is lat\_04 although if you see, sclat\_04, so this  
25 is the latch that holds the flag.



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1 Q Sclat\_04 is the latch?

2 A Yes.

3 Q What's a latch?

4 A A latch is a memory storage element, you know,  
5 there's, there's probably a hundred thousand of them on even  
6 the first of these designs. It's just a common building  
7 block that's used throughout a design like this, it's what  
8 holds the 1s and 0s that, you know, if you characterize a  
9 digital processor as functioning with.

10 Q Does it hold more than a 1 or a 0?

11 A It just -- it holds, logically or electrically  
12 it just holds a 1 or a 0.

13 Q Is it a counter?

14 A No, it's not a counter. You can build a  
15 counter out of multiple latches, but, and other logic but  
16 it's not a counter in and of itself.

17 Q Okay. So you were explaining to us the flag?

18 A Yeah. So the flag, so the way this works is,  
19 when we're putting instructions into the IRB, we check for  
20 dependencies in the way we described previously. If there is  
21 a dependency, we will set a 1 on that flag, put a 1 into that  
22 register, that's how we know we have a dependency. It stays  
23 there and prevents us from launching this instruction until  
24 sometime later, when we see the instruction we're dependent  
25 on launch, a comparator recognizes that, and then in response

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1 to that we will clear that flag, thus allowing the  
2 instruction to launch.

3 Q Now, let me just briefly go back to DDX51.  
4 Now you've described for us the flag concept with that latch,  
5 right?

6 A Yes.

7 Q Now, how is it that you don't have to count  
8 all the instructions and dependencies from top to bottom?

9 A Well, so we compare, when we insert  
10 instructions into the IRB, we compare the register number,  
11 and we use that in conjunction with knowledge of who most  
12 recently wrote that register, and from that we can identify  
13 exactly which instruction is the instruction that we're truly  
14 dependent on for the operand that we need.

15 Q And so you get it so there's only one  
16 dependency per instruction?

17 A There's only the one dependency that is truly  
18 important.

19 Q Would counting be a good idea?

20 A I don't believe so. I think it means you have  
21 to wait for all instructions that wrote to that result to  
22 launch before you consider launching.

23 Q So did you and Mr. Lotz think that you came up  
24 with some new ideas in connection with building this IRB?

25 A Oh, I don't think there's any doubt that we

1 came up with many new ideas.

2 Q What was new?

3 A Well, so you know, I think we were among the  
4 first to be trying to build a four-way superscalar  
5 out-of-order single chip implementation of a microprocessor.  
6 That meant there were lots of new issues that we had to  
7 figure out how to solve. Some that were common to anyone who  
8 might be doing something like this, others that perhaps were  
9 unique to HP's implementation because as I had stated, we  
10 had -- one of the objectives of the design is that we  
11 maintained compatibility with the precision architecture so  
12 that instruction code that ran on previous HP designs would  
13 also run on this one.

14 Q Did you file for any patent applications?

15 A We filed for several.

16 Q How many patents do you hold, sir?

17 A I've lost count to be honest, I think it's  
18 currently, granted is somewhere between 25 and 30, with more  
19 pending.

20 Q I'm going to ask you about a few of them. Can  
21 I see D318, please. Is this one of your patents that you  
22 have with Mr. Lotz?

23 A Yes. If you could please zoom in on the title  
24 section, thank you. Yes. This is one of several that we  
25 have together.

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1 Q In general, what is this patent about?

2 A So this patent deals with specifically  
3 attributes of our operand dependency, as we were looking at  
4 but specifically for tracking instructions that can take  
5 longer than one cycle to execute.

6 Q I see. Let's take a look at figure 6. Okay.  
7 Can you zoom in -- oh, wait a minute, that's not the right  
8 one. Let me look at figure 7. Yeah. What is figure 7  
9 showing?

10 A So figure 7 is essentially showing the logic  
11 that we were talking about just previously looking at the  
12 schematic. If you look down in this case in the lower right  
13 you'll see VALDEP as an output of this block of logic that is  
14 essentially the same signal we were considering before,  
15 you'll see something labeled there as M/S, master/slave, just  
16 a different way to label a latch basically, that is the latch  
17 we were referring to that holds the flag. Around that you'll  
18 see some of the other logic that performs the function of  
19 compare and such for recognizing dependency and clearing  
20 dependencies.

21 Q So is this a patent on one feature of the IRB?

22 A This is a patent on one specific aspect of  
23 functionality in the IRB, yes.

24 Q Let me look, ask you to look at D304. Can you  
25 tell us what this is, sir?

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1           A     Okay. So this is actually a patent that we  
2     filed later. This was a patent that covered some added  
3     functionality so as we reused our core design and added cache  
4     and such onto the chip to expand its capability, we also in  
5     some cases modified slightly certain parts of the  
6     functionality. This is covering one aspect of that where we  
7     made a change to allow for improved management of accesses to  
8     memory, just as an enhancement, that we had the opportunity  
9     to make in that time frame.

10           Q     Okay. D305. Can you just briefly describe  
11     what D305 relates to, a patent to you and Mr. Kumar and  
12     Quarnstrom?

13           A     So yes, this has to do with a different  
14     aspect, complication that we needed to support in order to  
15     work with the existing code. Again, for operand dependency,  
16     the architecture that we were working with allows us to reuse  
17     registers for floating point to use each half separately, as  
18     different targets, or to use them as one larger target. And  
19     so that added some complications, that required some  
20     additional creativity to generate a mechanism for handling  
21     that correctly, because you know, again, this machine doesn't  
22     do much good unless it generates a correct answer.

23           Q     Okay. D311. My favorite, panic trap system  
24     and method.

25           A     So panic trap, so I had mentioned, kind of

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1 alluded to there were other dependencies that we also had to  
2 track and we do that for some others but there are other  
3 types of dependencies that are so rare you don't really want  
4 to have to dedicate any circuitry to being able to track  
5 those correctly, or in some cases they're just rather  
6 difficult to track. So what this is covering is the notion  
7 that for those rarer cases, instead of trying to track the  
8 dependencies correctly, we can recognize whether something  
9 has happened that basically says we blew it, that we were  
10 executing out of order and we figured out we're getting the  
11 wrong answer but we can't figure out what the right answer  
12 is, this provides a mechanism to recognize that and to  
13 basically throw everything away in the IRB and start  
14 reexecuting at the point that we went afoul.

15 Q D312. What does this patent relate to?

16 A I'm waiting for the title. Okay. So so far  
17 we've just been discussing operand dependencies between  
18 simple add type instructions. The IRB also has to manage  
19 accesses that have to go access memory or data from memory,  
20 and it has to do all that and keep ordering straight in that  
21 case as well. So what this is looking at is the case that  
22 your dependency is actually through a memory location. You  
23 may write a memory location, you may choose to read it again  
24 shortly thereafter, and you sure better find the data that  
25 you just wrote, not the data that came from before you wrote

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1 that data. So this provides a mechanism to recognize when  
2 you have that type of dependency and it actually either then  
3 forces the load to wait until that data that you -- you're  
4 writing is in memory, or because we want to be aggressive and  
5 do this stuff out of order, it may instead discover you  
6 already read that data, it has the wrong data, and in that  
7 case, we actually then use the panic trap mechanism I was  
8 describing as a way to clear everything out, start again, and  
9 make sure we get the right answer.

10 Q D313. What is this one about, sir?

11 A Okay. So another attribute of our  
12 architecture, again designed originally for when we had, we  
13 were thinking in terms of in-order execution of instructions,  
14 there's a feature in the architecture that allows and  
15 actually in other architectures too I believe that allows one  
16 instruction to determine whether the next instruction should  
17 actually be executed or not, refer to it as nullification.  
18 In general, our fetch engine can predict whether we're going  
19 to be nullified or not, but they're -- you know, it's a  
20 prediction, it may not be correct. So this patent deals with  
21 logic that allows us to recognize when we have a  
22 nullification, manage the status of the -- the dependency  
23 basically for launch in those special cases and prevent  
24 launch until we know whether we're nullified or not. All to  
25 ensure, again, that in these cases we get the right answers.

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1           Q     D314. The '997 patent. Is this on a similar  
2     concept to the one you -- or related concept to the one you  
3     last described?

4           A     It is. It is. It's, it provides a different  
5     mechanism, so the one that I just described will get you the  
6     right answer but it's not the most efficient from a  
7     performance point of view. It's expected to be rare so we  
8     consider that to be okay. This is the case that maybe is a  
9     bit more common and matters more for performance. And what  
10    we do in this case is we can transform an instruction as we  
11    bring it into the IRB and recognize this is a potentially  
12    nullified instruction. I'm going to read both a data that I  
13    need to calculate the result, and what the previous contents  
14    of that register would have been if it is nullified. So  
15    either way, it can pass along the correct information to any  
16    subsequent instruction that is dependent on that result.

17           Q     Okay. Last one I'm going to ask you about,  
18     D316, the '474 patent. Does this relate to the overall  
19     system of the IRB?

20           A     It -- it is addressing another set of  
21     dependency types, the op field as we presented it here, it  
22     does have the drawback that it is a physically large block,  
23     and we have to have that field for each of the main operands  
24     that we're tracking, but for other dependencies that are not  
25     as critical, that don't change as often, we were looking for



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1 a different solution that didn't require as large an  
2 investment in chip area, and that's actually what this one is  
3 covering is, is a mechanism that allows us to do that in much  
4 more area efficient although slightly lower performance  
5 application.

6 Q You mentioned performance. Did each of these  
7 patents relate to the IRB's performance?

8 A Yes. So to get the performance out of the  
9 machine that we needed, we arrived at the IRB structure as  
10 the way to achieve that, and each of these allows that to  
11 occur, either by enhancing performance in these particular  
12 cases, or by guaranteeing correctness so that the overall  
13 design is even -- is even worthwhile.

14 Q You have other patents in addition to these?

15 A Yes.

16 Q So let me have DDX445. And I've alluded to  
17 the overall chip before, I just want you to briefly explain  
18 to the ladies and gentlemen of the jury the other portions of  
19 this little city of transistors that you built, kind of what  
20 each block does, in general.

21 A Okay. So we of course have been talking about  
22 the IRB, I think we have a fair understanding, to feed the  
23 IRB, we have what we refer to as instruction fetch engine.  
24 This is the part of the machine that's responsible for  
25 sending addresses into our I-cache, the instruction cache, to

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1 pull four instructions out at a time, to sift through them  
2 for branches. Branches is something we haven't talked about,  
3 but all instruction, all computer code will have branches in,  
4 that determines which way you proceed. Because we want to  
5 insert four instructions at a time, we need to have a way of  
6 predicting which way branches are going to go, otherwise we  
7 will quickly run into a roadblock and not be able to feed the  
8 IRB.

9 Q That has a lot to do with performance, didn't  
10 it?

11 A Oh, yeah, that's critical for performance. So  
12 the fetch engine is responsible for sending addresses,  
13 looking for branches, predicting where the next fetch should  
14 be, bringing that in, and ultimately sending all of this into  
15 the IRB sort block which is something else we haven't talked  
16 about that's figuring out where exactly in the IRB you should  
17 put each of these instructions, and then ultimately doing  
18 that insert.

19 Q Okay. What about that thing to the right, FP,  
20 what's that?

21 A Well, so the FP to the right is for floating  
22 point so that is the data path that actually is responsible  
23 for reading a register and performing floating point  
24 operations. So multiplies, adds with decimals that are  
25 actually in the format, producing a result, and being able to

1 put it back into the floating point registers to implement  
2 those kinds of instructions.

3 Q That has something to do with performance?

4 A Oh, absolutely.

5 Q Okay. And then I notice some caches on the  
6 left, you mentioned caches before, those are large sections  
7 of the chip, what do they do?

8 A So I mentioned the I-cache which is a local  
9 repository for instructions that we need to execute. As long  
10 as we're hitting in that I-cache, we can feed the machine at  
11 the rate we need to. The D-cache or data cache refers to  
12 memory locations that have their data collected for purposes  
13 of loads or stores that can then pull that data into the  
14 register file and make it available for instructions to  
15 operate on, or one concluded, it's where you put the data to  
16 make it available for, ultimately for purpose of the whole  
17 computer which is to generate output.

18 Q Last couple of sections. What's that thing in  
19 the middle going up and down, D-cache DP?

20 A Okay. So D-cache DP is a whole set of logic  
21 that is just orchestrating accesses into and out of the data  
22 cache.

23 Q Okay.

24 A It's where the logic is actually interpreting  
25 the results that are coming from the physical storage.

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1           Q     And I think you mentioned this in connection  
2 with one of your patents, underneath the IRB is something  
3 called an ARB, do you see that?

4           A     Oh, the ARQ actually is I believe what that --  
5 ARB, you're right, it's labeled ARB here. ARB is the portion  
6 of logic that is tracking all the load/store dependencies so  
7 I mentioned that as you said in the patent, there's a bit  
8 more than just that that's going on in there but it is --  
9 well, I personally spent a couple of years developing that  
10 portion of the design. It was quite a challenge to get it to  
11 all work and to work at speed again because it was -- it was  
12 a timing challenge to get everything to work as fast as it  
13 should.

14          Q     Does that have to do with performance?

15          A     Well, yeah, I mean if we couldn't meet our  
16 speed objectives and we -- the whole clock rate, rate of the  
17 design would have slowed down, proportionately impacted the  
18 overall performance of the design.

19          Q     How many engineers worked designing what we're  
20 looking at here, the PA-8000? This is an 8700 but the  
21 PA-8000, how many?

22          A     The PA-8000, I believe the number of engineers  
23 working on this physical design, not including the folks who  
24 were doing compilers which we haven't talked about yet and  
25 the other aspects of the overall system delivery, I believe

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1 peaked at about 150 engineers, with most of those working  
2 over probably a span of most of those five years, and that's  
3 just tape release, that's not really even including the work  
4 after we had received silicon back from it.

5 Q How about the balance of the years for the  
6 upgrade project for all the upgrades?

7 A Well, actually, because this design was a  
8 little bit later than we wanted to, we actually ended up  
9 growing a fair amount in subsequent years, so I believe  
10 probably more in the 200 range for the second five years all  
11 working on various derivatives over the years, less than that  
12 at the very end, but for the bulk of that period.

13 Q Okay. Last couple of questions. Let me show  
14 you, we've seen, it seems like 150 documents in this case  
15 talking about this chip that you guys designed. Let me show  
16 you one of them. This is P436, and let me ask you if you  
17 recognize this. Do you recognize this?

18 A I believe I've seen it before.

19 Q Let me see 49719. And I want to go down to  
20 the part that talks about microprocessor architecture, I  
21 think it's the -- right there, yeah, right there, that's what  
22 I want. You haven't been here but we've seen this many,  
23 many, many times. It talks about a completely new  
24 microarchitecture, do you see that?

25 A Yes.

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1 Q Who did that?

2 A Well, we did that. The completely new is, you  
3 know, what we did starting with a blank sheet of paper.

4 MR. ALLCOCK: I don't have any more questions  
5 for the witness at this time, your Honor.

6 THE COURT: Thank you, Mr. Allcock.  
7 Mr. Poplawski.

8 MR. POPLAWSKI: Your Honor, would it be time  
9 for a brief break or --

10 THE COURT: Let's take a break and we'll come  
11 back for 10 or 15 minutes and we'll be done for the day, so  
12 let's take a 10-minute break, and then --

13 THE CLERK: Court stands in recess, 10  
14 minutes.

15 (Jury Excused, 4:37 p.m.)

16 THE COURT: We'll finish up around 5. You  
17 need me or you just want a break?

18 MR. POPLAWSKI: Just a break.

19 THE COURT: Okay.

20 MR. POPLAWSKI: Well, we do need you, just not  
21 at this moment.

22 THE COURT: I can understand that.

23 (Whereupon a recess was taken from 4:37 p.m.)  
24 to 4:47 p.m.)

25 (Open Court, Jury Out.)

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1 THE COURT: Are we ready, Mr. Anderson? Yes,  
2 we're ready, bring them in, Mike.

3 (Jury Present.)

4 THE COURT: Mr. Poplawski. I'm convinced that  
5 half of the skill of being a trial lawyer is looking fresh at  
6 the end of the day.

7 MR. POPLAWSKI: I'll let others be the judge  
8 of that.

9 THE COURT: You look fine, Mr. Poplawski.

10 MR. POPLAWSKI: Your Honor, I would like to  
11 ask Ms. Denise McKenzie to conduct the examination.

12 THE COURT: Ms. McKenzie, you may proceed.

13 CROSS-EXAMINATION BY MS. MCKENZIE:

14 Q Good afternoon, Mr. Lesartre, how are you?

15 A Good afternoon, good, thank you.

16 Q You testified about several patents where you  
17 are the named inventor, was that correct?

18 A That's correct.

19 Q Now, out of all these patents, did you ever  
20 patent the IRB?

21 A I don't personally have a patent on -- well,  
22 first of all, the overall IRB is a complex structure. What  
23 we patented was different attributes, different capabilities  
24 of the IRB, not the overall IRB.

25 Q So this new microarchitecture that you talked

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1 about, you didn't get a patent for that, is that correct?

2 A I don't personally have a patent for that, no.

3 Q Now did you ever -- you testified about the  
4 latch, is that correct?

5 A We talked about a latch, yes.

6 Q Did you get a patent for the latch?

7 A No, the latch has been around for a long time.

8 Q And you talked about something called a flag?

9 A Yes.

10 Q That indicates when you have a data  
11 dependency, is that correct?

12 A That's correct.

13 Q Did you get a patent on that flag?

14 A No, I did not get a patent on the notion of a  
15 flag, that also has been around a long time.

16 Q So did you get a patent on even the  
17 combination of the latch and the flag?

18 A No, I did not.

19 Q Now you testified that the PA-8000 implements  
20 register renaming, is that correct?

21 A I testified that it implements something very  
22 similar, our own particular implementation, but yes.

23 Q Now, register renaming is a very old, old  
24 technique, isn't that correct?

25 A You're asking if it is a very old technique?



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1 Q Yes.

2 A Old in the computer industry, yes.

3 Q So you didn't invent register renaming, did  
4 you?

5 A No, and I didn't claim to.

6 Q Did Mr. Lotz invent register renaming?

7 A No.

8 Q Did anybody at HP invent register renaming?

9 A No.

10 Q So you talked about these things called slots.  
11 Are slots the same thing as renamed registers?

12 A When we refer to slots, we were referring to  
13 entries in the IRB where we put the instructions.

14 Q Could I put -- could we please go to DDX51.  
15 Here at DDX51, these things that you're calling slots, are  
16 these renamed registers?

17 A So in that description, yes, those are  
18 effectively the rename registers where we put our results.

19 Q Now you said you're aware of Dr. Torng's '115  
20 patent, is that correct?

21 A I do not believe that's what I said.

22 Q Are you aware of Dr. Torng's '115 patent?

23 A I am now, yes.

24 Q In 1996, were you aware of Dr. Torng's '115  
25 patent?

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1 A Somewhere in that time frame, yes.

2 Q Did you in fact study the '115 patent?

3 A Not in detail. I read through it briefly at  
4 that time.

5 Q Could I please have clip number 9104 of  
6 Lesartre, it's page 154, starting at line 24.

7 (Video played.)

8 Q So do you now recall studying the patent?

9 A Well, so I did review it, and I did exactly  
10 what I stated in that video, I reviewed it, I gave my initial  
11 response, and that was the end of it at that time.

12 Q Well, what was your initial response?

13 A That we did not infringe.

14 Q So when you reviewed the patent, about how  
15 much time did you take to review the '115 patent?

16 A I don't recall precisely, but I believe it was  
17 on the order of probably half an hour or so.

18 Q So you reviewed the patent a half an hour and  
19 determined that the IRB didn't infringe the '115 patent?

20 A I did not feel it infringed the '115 -- '151  
21 patent or --

22 Q '115.

23 A '115, sorry.

24 Q Did you review the file history of the '115  
25 patent?

1 A At that time?

2 Q Yes.

3 A No.

4 Q What did your analysis consist of when you  
5 reviewed the '115 patent?

6 A I looked at the description in the patent  
7 writeup and I did not recognize that as what we had done and  
8 that's what I told the person who was requesting me to give  
9 my thoughts.

10 Q Did you draft a writing or put your analysis,  
11 make any notes about your conclusions with respect to the  
12 '115 patent?

13 A I do not believe I actually wrote anything  
14 down, it was handled over the phone.

15 Q Now, you talked about one of your patents, the  
16 '934 patent, do you recall that?

17 A '934. Would it be possible to put that on the  
18 screen just to be sure which you're referring to?

19 Q Okay. The '934 patent is D318. So is this  
20 patent, does this patent cover the IRB?

21 A It does not cover the entire IRB, it covers  
22 one aspect of the functionality that it implemented.

23 Q And what aspect does it cover?

24 A It covers specifically the mechanisms we  
25 needed in place in order to ensure that given the precision

1 architecture's requirement to execute instructions that could  
2 use either left or right path of floating point registers,  
3 that it be able to do that and use the operand dependency  
4 logic in such a way that it would still get the correct  
5 answer.

6 Q Now does this patent improve the performance  
7 of the IRB?

8 A It improves the performance of the IRB in the  
9 sense that if our design was not capable of implementing this  
10 functionality correctly, we would not be able to ship it as a  
11 product.

12 Q So it doesn't cause the IRB to speed up or  
13 issue instructions in a quicker manner?

14 A This particular patent does not.

15 Q Could this particular patent even hurt the  
16 performance of the IRB by slowing things down?

17 A The patent itself does not hurt the  
18 performance, no.

19 Q But the invention described in the patent,  
20 could it?

21 A Could the -- no, I don't believe that states  
22 the case.

23 Q Could I have Exhibit D318, please. Mr. Hoy.  
24 Could I have it up? So this patent discusses floating point,  
25 issues with floating point numbers, right?

1           A     Yes, isn't that the one we were just looking  
2     at?

3           Q     Yes, this is the one we were just looking at.  
4     Is that correct?

5           A     Yes.

6           Q     And is that a very small issue with respect to  
7     the IRB?

8           A     I'm sorry, floating point performance?

9           Q     No, floating point issues.

10          A     No. It's one of its primary benefits or one,  
11     the major benefits of the design is its floating point  
12     capability, and this was necessary to execute floating point  
13     correctly.

14          Q     So could we go to figure 7 of D138, please.  
15     And the signal called VALDEP?

16          A     Yes, I see it.

17          Q     Now is this the flag that you were testifying  
18     about earlier?

19          A     VALDEP is the signal that conveys the status  
20     of that flag to the central logic that considers launch, yes.

21          Q     And VALDEP can have a value of 1 or 0, is that  
22     correct?

23          A     It indicates, yes, that it could have a  
24     logical value of 1 or 0.

25          Q     Now in the patent with respect to VALDEP, did

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1     you ever refer to VALDEP as a flag?

2             A     Well, again, VALDEP I would not consider to be  
3     the flag, I would consider the flag to be the latch that's  
4     also in that same schematic.

5             Q     So I thought you testified earlier -- so that  
6     the latch itself is a flag, is that correct, is that what  
7     you're saying?

8             A     The latch contains the flag, that contains the  
9     status.

10            Q     So the latch contains a 1 or a 0, is that  
11     correct?

12            A     Yes.

13            Q     So when there's an essential data dependency,  
14     the latch contains a 1, is that correct?

15            A     When a dependency has been recognized, yes, it  
16     contains a 1.

17            Q     And when there's no dependencies, the latch  
18     contains a 0, is that correct?

19            A     That's correct.

20            Q     Okay. So isn't a 1 and a 0 a value?

21            A     Yes.

22            Q     Now, with respect to the PA-8000, has HP ever  
23     considered the mode of turning off the IRB?

24            A     Has it ever considered the mode?

25            Q     Yes.

1           A     We have such a mode, we use for -- we use for  
2     system turn on.

3           Q     And was that mode of turning off the IRB, it  
4     wasn't desirable, right?

5           A     It had a purpose and it was desirable for that  
6     purpose.

7           Q     Well, when you turn off the IRB, is the  
8     performance less desirable than that of the PA-8000?

9           A     When you turn off or you use that mode, the  
10    performance would be lower than with it turned -- with the  
11    IRB not turned off.

12          Q     So turning off the IRB is not a desirable  
13    mode, is that correct?

14          A     It's not a desirable mode for a shipping  
15    system.

16          Q     Now, you have several patents, is that  
17    correct?

18          A     Yes.

19          Q     And just because you're a named inventor on a  
20    patent, that doesn't mean you can't infringe, HP can't  
21    infringe the '115 patent, isn't that correct?

22          A     I'm not a patent lawyer, so I'm not the one to  
23    make that judgment.

24          Q     But you have several patents, right, and  
25    you're familiar with the patent process, isn't that correct?

1           A     I'm most familiar with the process for filing  
2     patents, not for litigating patents.

3           Q     Okay. So is it your understanding that if you  
4     have several patents and HP has a number of patents, you  
5     could still infringe the '115 patent?

6           A     It's my understanding that patents are  
7     distinct from one another.

8           MS. McKENZIE: Your Honor, I have about 30  
9     more minutes to go and I don't know if this is a good time to  
10    break or if I should keep going, or --

11          THE COURT: I think if we put that to a vote,  
12    you'd lose. So we wouldn't want you to lose, but I want to  
13    talk to them a minute, so thank you very much --

14          MS. McKENZIE: Okay.

15          THE COURT: -- Ms. McKenzie. Remember, there  
16    will be a time to deliberate about this case, and that time  
17    is not yet. We're all going to enjoy a weekend and eat hot  
18    dogs and do all sorts of other horrible things to our bodies,  
19    but please return at 8:30 on Tuesday morning. And in the  
20    interim, don't think about, don't talk about, don't do  
21    anything about this case. We must remember that our  
22    obligation is to keep our minds solely on the evidence that  
23    we'll be -- that has been and will be presented. But I do  
24    want to say I've really been very impressed with your  
25    service, you've all been very attentive and I'm glad you're



1 working with us all on this case. We'll see you Tuesday  
2 morning, have a great weekend.

3 THE CLERK: Court is adjourned until Tuesday  
4 at 8:30.

5 (Jury Excused, 5:04 p.m.)

6 THE COURT: All right. We have some more work  
7 to do. Exhibits for starters, right?

8 THE WITNESS: Excuse me, Judge, should I be  
9 excused at this point?

10 THE COURT: Excuse me, you may step down. Now  
11 you'll be back Tuesday as well.

12 THE WITNESS: I guess I will be now.

13 THE COURT: Thank you.

14 MS. KIM: Your Honor, plaintiff would move  
15 into evidence the following exhibits: P457, P1407, P733,  
16 P178, P441, P132, P440, P307, P1349, P135, P1148, P174, P236,  
17 P1872, P463, P468, P170, P1501, P1657, P440, P466, P437,  
18 P948, P960, P523, P1080, and P1441.

19 Your Honor, also, we would like to move to  
20 enter into evidence two deposition video testimony that we  
21 played in our case in chief. One is deposition testimony  
22 from Wayne Johnson, and from Darius Tanksalvala.

23 THE COURT: Okay, thank you. Ms. Penning, am  
24 I looking to you for some kind of objection or approval?

25 MS. PENNING: Yes, you are, your Honor, I'm

1       sorry, there's just a couple we may have an objection to, I  
2       just want to make sure before I take the court's time. I'm  
3       checking my list right now.

4                   THE COURT:   You can confer with Ms. Kim if  
5       that would help.

6                   MS. PENNING:   That would help, thank you, your  
7       Honor.

8                   THE COURT:   You two can look at it together.  
9       While they're doing that, do we want to do the motions which  
10      would occur at the end of Mr. Poplawski's case today or do we  
11      want to do that tomorrow?

12                  MR. ALLCOCK:   I would -- I'm at the court's  
13      pleasure. I personally would vote for tomorrow.

14                  THE COURT:   Well, we'll probably all be  
15      fresher tomorrow. Mr. Poplawski, do you have a strong  
16      feeling one way or another?

17                  MR. POPLAWSKI:   The only complication,  
18      Mr. Anderson has a conflict because we have witnesses coming  
19      in, so depending on what -- I'd like Mr. Anderson to be here.

20                  THE COURT:   Absolutely.

21                  MR. POPLAWSKI:   Depending on what time we do  
22      it, we can do it tomorrow.

23                  THE COURT:   We can -- we can accommodate  
24      Mr. Anderson's schedule certainly, we've -- I see us being  
25      here a few minutes tomorrow.

1 MR. ANDERSON: Your Honor, the witnesses we  
2 have are substantial enough that we probably should go  
3 forward now.

4 THE COURT: What's that?

5 MR. ANDERSON: I probably have enough  
6 witnesses I'm meeting with tomorrow that are already  
7 scheduled that we probably should go forward now if the court  
8 would like to do so. I have enough witnesses already  
9 scheduled for tomorrow that I have to, that are coming in  
10 to -- for meeting that we probably should proceed with  
11 motions now if the court has the time to do so.

12 MR. ALLCOCK: Okay.

13 THE COURT: Sounds like that's appropriate.

14 MR. ALLCOCK: Your Honor, I'll address, we'll  
15 have motions as to infringement, Mr. Shelton will address  
16 that. Damages on the EMVR that I'll address but I'll address  
17 briefly since we've already talked about a lot of it, and  
18 then on willful infringement which I'll address myself and  
19 I'll start now.

20 THE COURT: Go.

21 MR. ALLCOCK: Your Honor, they have not proven  
22 willful infringement by clear and convincing evidence, I mean  
23 they haven't. They haven't proven the objective prong under  
24 *Seagate* and they haven't proven subjective prong under  
25 *Seagate*. We have, if anything, perhaps the extremely solid

1 evidence of nonwillfulness by virtue of having a very prompt  
2 opinion by an engineer that the court's heard, very capable  
3 gentleman, a-two-and-a-half-year gap in activity from  
4 Cornell, after Cornell was put on notice of the precise  
5 positions that we're arguing to the court today, precise  
6 positions. I don't think I've ever, I've ever had a case  
7 like that. And then when the activity was resurrected by  
8 Cornell two years and three months later, prompt opinion  
9 letters, one after another, with again, the exact arguments  
10 that we're arguing today, collectively. And so your Honor, I  
11 really think of the cases --

12 THE COURT: What do you think objective  
13 recklessness is?

14 MR. ALLCOCK: I think it would be a  
15 circumstance where objectively based upon the evidence that  
16 was available to the party at the time of that determination,  
17 it would have been, the party would have known that they were  
18 seriously at risk of infringement or it would have been  
19 obvious to that party that they would have been guilty of  
20 infringement. And I think here we have the exact opposite.  
21 We have Mr. Worley looking at the situation, reading the  
22 patent frankly the same way as we read it today, and in  
23 fairly short order coming up to the conclusion of  
24 noninfringement. So you have exactly I think the opposite of  
25 the objective recklessness issue.

1                   And there's no timing problem whatsoever. I  
2                   mean it's not a matter that there's any timing issue with  
3                   respect to us looking at it although I think that would go to  
4                   the subjective point more than to the objective point.

5                   THE COURT: Let me just hear briefly from  
6                   Mr. Poplawski on this point.

7                   MR. POPLAWSKI: Your Honor, I think that there  
8                   is an abundance of evidence of objective recklessness in the  
9                   evidence that --

10                  THE COURT: What is that objective reckless  
11                  standard first? Not asking for the evidence, for what you  
12                  perceive to be the legal standard.

13                  MR. POPLAWSKI: And I, this will of course  
14                  develop under *Seagate*, objective recklessness it seems to me  
15                  is business conduct which is objectively reckless under the  
16                  circumstances, in reckless disregard of what a reasonable  
17                  business would have done under the circumstances. And so I  
18                  think we have to look at the objective circumstances here,  
19                  starting in the 1990s, and that's -- well, if we go back to  
20                  1988, I know the patent hadn't issued yet but the first  
21                  instance that there was at least notice of a patent  
22                  application was the letter from Cornell to high-ranking  
23                  official, Mr. Birnbaum. Now, we're not of course solely  
24                  relying on that.

25                  THE COURT: You think there's going to be

1       recklessness whenever there's just -- these are just thought  
2       questions for the moment, do you think there's ever going to  
3       be recklessness where there's any validity questions at all  
4       early on?

5                   MR. POPLAWSKI: Well, your Honor, that kind of  
6       takes us all away to 1996 --

7                   THE COURT: I'm trying to keep us away for a  
8       moment from the facts of this case and I'm playing kind of,  
9       you know, hypothetically, if -- and think of yourself now  
10      being on the other side of the equation, you're defending  
11      somebody, and as long as there's a question of validity and  
12      we would call it a credible question of validity, wouldn't  
13      there be, wouldn't it be hard to call them reckless to  
14      proceed?

15                  MR. POPLAWSKI: I think it's about context,  
16      your Honor, and I think the validity question is not  
17      something that's to be viewed in isolation from the other  
18      factual circumstances that are evolving. So for example, as  
19      applied to this particular case, even if we only take a  
20      snapshot here of 1996, and that's when Mr. Worley came out  
21      with this paper, and I'm going to for a moment exclude  
22      everything that went on before that, what we have here  
23      leading up to that is the Hunter Rawlings/Lew Platt meeting,  
24      and then we've got the memo from Lew Platt to others in  
25      management saying, don't do anything unless you find anything

1 good, and I know both sides can put their --

2 THE COURT: Spins.

3 MR. POPLAWSKI: -- spins on how that's to be  
4 treated, and then we have the course of conduct that ensues  
5 after that. Mr. Worley gives what we view as a quick and  
6 dirty analysis, consistent with what Mr. Platt basically  
7 said, you know, don't take this seriously, and then we have  
8 the followup communications from I believe Platt to Birnbaum,  
9 and there's one more that escapes me that we've put in which  
10 says this is all a bunch of academic arrogance, don't take  
11 Cornell seriously. Now before that, we've got a sequence  
12 of --

13 THE COURT: But if they're, if they can show  
14 us any concerns about validity, do we interpret that as  
15 objective recklessness?

16 MR. POPLAWSKI: Well, a concern about --

17 THE COURT: If they really have some basis for  
18 thinking it's invalid, then are they justified in saying  
19 they're arrogant and we can proceed?

20 MR. POPLAWSKI: Well, some basis, your Honor,  
21 is not necessarily a sufficient basis, viewed from the  
22 context of an objective person under the circumstances.  
23 Let's look at what the situation was here by 1996.  
24 Dr. Tanksalvala had gotten the Johnson thesis, and both sides  
25 have their interpretations --

1                   THE COURT:   You've probably followed the law  
2                   and you kind of know probably where the willfulness needle  
3                   was before *Seagate*.

4                   MR. POPLAWSKI:   Right.

5                   THE COURT:   And you recognize that objective  
6                   recklessness has kicked that needle in a direction  
7                   unfavorable to plaintiffs.   How does that affect your  
8                   argument here?

9                   MR. POPLAWSKI:   Well, your Honor, we believe  
10                  that there was copying here, and we don't have direct  
11                  evidence of it but it's something that the jury can infer  
12                  from the indirect evidence, including the PhD thesis that  
13                  Dr. Tanksalvala testified was disseminated by him and read to  
14                  the core members of his design team, Mr. Lotz and  
15                  Mr. Lesartre.   That thesis discussed the dispatch stack,  
16                  highlighted the Acosta, Torng paper, the jury --

17                  THE COURT:   This is the Johnson --

18                  MR. POPLAWSKI:   The Johnson thesis.

19                  THE COURT:   -- becomes the superscalar book?

20                  MR. POPLAWSKI:   Well, I haven't compared the  
21                  whole thing, your Honor, but there are aspects of that, sure.

22                  THE COURT:   Okay.

23                  MR. POPLAWSKI:   That turned into the  
24                  superscalar book, so let's move forward here.   You've got  
25                  Dr. Tanksalvala whose team reads this, the jury can infer



1     whether a reasonable engineer under those circumstances would  
2     have picked up the Acosta, Torng paper, reviewed it, seen the  
3     patent application, right, this convinced them, in any event  
4     Tanksalvala, that multiple out-of-order issuance was the way  
5     to go. This was then taken up the chain to Mr. Wheeler. You  
6     thereafter have a sequence of events where HP proceeds with  
7     the design, 1994, Cornell sends a letter to HP saying, we've  
8     seen an article in the news, I think it was in something  
9     called Microprocessor Reports, your processor is not yet  
10    taped out, right, so we haven't seen it on the market,  
11    there's nothing we can do, so we have this event in  
12    confluence with what Dr. Tanksalvala took up the chain to  
13    Mr. Wheeler. Then we move forward here to 1995 to 1996,  
14    we've got the communication coming out from Cornell, we've  
15    got the Worley memo, and then after that, what at least how  
16    we view the evidence is a sequence of events where Cornell is  
17    being told one thing, namely that, oh, HP doesn't infringe,  
18    we respect the patent, and another thing is going on  
19    internally. So that's basically our position.

20                   THE COURT: So give me what you would say is  
21    your best evidence of willfulness. If you were going to have  
22    me look at two or three things, what are they going to be?

23                   MR. POPLAWSKI: Our best evidence of  
24    willfulness I would say is at a minimum indirect evidence of  
25    copying.

1 THE COURT: Okay.

2 MR. POPLAWSKI: Because no one got up and said  
3 here's the paper that shows it or I did it. Coupled with the  
4 course of business conduct that occurred thereafter, all  
5 right, including the Platt memo, the response to HP's  
6 infringement -- or Cornell's infringement charge in 1996, the  
7 internal communications which we only learned about after the  
8 lawsuit.

9 THE COURT: I've got those things, yeah.

10 MR. POPLAWSKI: I think those are the  
11 fundamental things, and then there's the sequence of events  
12 from 1997 onward during which Cornell was still being told  
13 one thing but HP was doing another thing internally.

14 THE COURT: Okay, I've got that, too. Now  
15 balance that evidence against the Hewlett-Packard position  
16 that they thought the patent was invalid from the outset, or  
17 from very early.

18 MR. POPLAWSKI: Let's look at that, your  
19 Honor. The jury can certainly infer from the evidence that  
20 Dr. Worley's 1996 paper was a whitewash, I mean that HP will  
21 put their spin on it, we're going to say Worley didn't  
22 understand the invention, he just followed Flynn -- Platt's  
23 instructions, don't do anything really seriously, et cetera.  
24 All right. The jury can make that inference. And I'm sorry,  
25 I lost my train of thought. The court's question was?

1 THE COURT: About how do we counter your  
2 evidence --

3 MR. POPLAWSKI: Yes, validity, yes.

4 THE COURT: -- with their proof of validity.

5 MR. POPLAWSKI: So at any rate let's move  
6 forward from the Worley memo. The next time that we really  
7 see any discussion that I know about of validity or  
8 infringement is in 1999, and in fact someone can get up and  
9 correct me if I'm wrong, but I think the 1999 nonliability  
10 opinion was just noninfringement, but I'm sure Mr. Allcock  
11 will correct me if I'm wrong, but then we get into 2001 and  
12 HP gets an opinion on invalidity and infringement in  
13 October 2001, that's a few months before the lawsuit gets  
14 filed.

15 THE COURT: Okay. I think I've got the  
16 positions. Anything else?

17 MR. ALLCOCK: I can't resist, your Honor, just  
18 two points.

19 THE COURT: I'm counting.

20 MR. ALLCOCK: Counsel mixed up the objective  
21 and subjective parts of it in my judgment.

22 THE COURT: That's point one.

23 MR. ALLCOCK: This -- well, that's the main  
24 point, that all of the facts that he recited as between  
25 conducts between the parties or whatever have nothing to do

1 with the first threshold standard of objective recklessness  
2 that the court asked me about, and there's no evidence of it.  
3 I mean the Worley memo is the best they got, and it presents  
4 the exact same defense we're presenting now.

5 THE COURT: I think I've got that. Tell you  
6 what, give me one second, I'll be right back and we'll  
7 continue with the rest of your presentation, Mr. Allcock.  
8 You can relax a little bit here for a minute.

9 (Pause in Proceedings, 5:23 p.m. to 5:24 p.m.)

10 THE COURT: Did you want to say something  
11 further on this point?

12 MR. POPLAWSKI: Yeah, I'd just like to make  
13 one more point. I think objectively, the Worley  
14 December 1996 memo can be viewed as a result-driven analysis.  
15 I mean as far as I know, the prior art that Mr. Worley was  
16 looking at is not the subject of HP's invalidity defenses in  
17 this litigation. Mr. Worley wasn't a patent attorney, and I  
18 think he did the job that he was asked to do, and the  
19 question is whether under the circumstances that can be  
20 viewed as part of this chain of objectively recklessness  
21 conduct.

22 THE COURT: Thank you, Mr. Poplawski.

23 MR. ALLCOCK: Your Honor, Mr. Shelton --

24 THE COURT: Mr. Allcock, do you want to --

25 MR. ALLCOCK: On the noninfringement motion.

1 THE COURT: Okay.

2 MR. SHELTON: Good afternoon, your Honor, may  
3 it please the court.

4 THE COURT: Mr. Shelton.

5 MR. SHELTON: Your Honor, the evidence of  
6 infringement is so slight in this case, I literally wrote my  
7 arguments down on a Post-it note. There is no literal or  
8 doctrine of equivalents infringement of the asserted claims,  
9 namely 1, 6, 14, 15, and 18 because what's happened here is  
10 that rather than the court's constructions having been  
11 applied to the PA-8000, there's been a substitution of the  
12 criteria. In other words, the construction for what alpha is  
13 which is central to the resolution of infringement was never  
14 used in this case. It wasn't used in expert reports, it  
15 never appeared in Dr. Smith's expert report. When asked at  
16 his deposition what construction he used for that essential  
17 dependence field in the court's construction of dispatch  
18 stack, he made one up. He said it's a piece of state that  
19 tracks an essential dependency, and I said, why didn't you  
20 use the court's construction, which the parties agreed to,  
21 and the court endorsed, for alpha, and his answer was, it  
22 doesn't appear explicitly in the claims. The jury never  
23 heard from Dr. Smith what that stipulated construction was.  
24 Instead, they saw a lot about renaming, they saw a lot about  
25 how a flag that counts from 1 to 0 or 0 to 1 somehow is

1       literally the same thing as the a(S1) or a(S2) counters in  
2       the patent which have to count all of the dependencies.

3               So instead of all, the line's been placed  
4       through that and now it's become sufficient for literal  
5       infringement to count to 1.

6               THE COURT:   So your contention is that  
7       Dr. Smith did not link the accused circuit to the claim  
8       language.

9               MR. SHELTON:   That is correct, your Honor.

10              THE COURT:   But I recall very clearly  
11       Dr. Smith putting up a plain language and putting a fancy  
12       green check as he would discuss each aspect of --

13              MR. SHELTON:   I remember those slides as well,  
14       your Honor, but when, within the construction of dispatch  
15       stack which is quite lengthy, it reads an essential  
16       dependence field, i.e., a(Si), so in other words, that is  
17       a(Si), a(Si) or alpha, a(S1), a(S2) were construed by this  
18       court and those constructions were never applied because  
19       those constructions made clear that what you have to count  
20       for alpha as all the previous writers of an instruction  
21       source operand.   Not 1, or 0, all of them.   And Dr. Smith  
22       agreed on cross-examination yesterday that if you had a  
23       dispatch stack with 28 rows and all of the writers of the  
24       preceding instructions were F0, the count would be 27.   When  
25       asked about the IRB which happens to have --

1                   THE COURT: I think he also pointed out,  
2                   however, that counting it as 1 is the same as, or in his  
3                   terminology was the same as flagging it as a dependency, did  
4                   he not?

5                   MR. SHELTON: That is his opinion, your Honor,  
6                   but the problem is that he admitted that --

7                   THE COURT: Well, but couldn't the jury credit  
8                   that?

9                   MR. SHELTON: Not for literal infringement  
10                  because for literal infringement, alpha has to count all of  
11                  the preceding writers, it's not a count of dependencies  
12                  because as we have heard in HP's case already, in Cornell's  
13                  case, there are more writers in the dispatch stack that write  
14                  to --

15                  THE COURT: Couldn't the jury consider  
16                  multiple flags as being the same as what you're construing  
17                  the court's counting function to be?

18                  MR. SHELTON: No, your Honor, because the  
19                  multiple flags are independent. So there is an a(Si), a(S1)  
20                  counter for the S1 register, there's an a(S2) field for the  
21                  S2 register and so on. So the fact that they're multiple  
22                  flags don't help you cobble together something that counts.  
23                  I just --

24                  THE COURT: Okay. I think I have your point.  
25                  Anything else, Mr. Shelton?

1 MR. SHELTON: Oh, yes, your Honor. There was  
2 no explicit opinions about function, way, result or  
3 insubstantial differences in expert discovery in this case,  
4 and what we saw from Dr. Smith is he provided in I believe  
5 about two or three sentences opinions purporting to be on  
6 doctrine of equivalents or just two parts of the dispatch  
7 stack, the S1 and S2 field for the source registers and then  
8 the alpha field. He did not provide sufficient analysis and  
9 by not considering the way, very, very considerable  
10 differences in way and result between the dispatch stack and  
11 the PA-8000, he's not provided the jury with sufficient  
12 evidence of infringement under the doctrine of equivalents.

13 And there's another wrinkle here that frankly  
14 surprised me. Claims 1 and 14 are method, are claims that  
15 have means plus function language, and as we all know, in  
16 order to show infringement of a means plus function element,  
17 you must take the court's construed function, find that  
18 identical function in the claim, then look for the  
19 corresponding structure literally, or its equivalent. The  
20 jury didn't hear a single word about that analysis. There  
21 was never any mention of the function of the IRB  
22 corresponding to those elements, explicitly, and neither was  
23 there any analysis or testimony about those structures. And  
24 in particular, the reservation circuit was found by the court  
25 to be corresponding structure for the means for issuing step.



1 This is why Cornell wanted to get into that slide that said  
2 the court defined reservation circuit as conventional  
3 arbitration logic. There was no construction why, because it  
4 was corresponding structure, the court didn't need to define  
5 what it was, because he had to go through the analysis and  
6 show that the reservation circuit which is shown in figure 3  
7 and described in column 6 at lines 14 to 21, that that  
8 structure was literally or equivalently in the PA-8000 and  
9 there wasn't a single word about that.

10 So claims 1 and 14 must fall. The analysis,  
11 it's not a question of weighing the evidence, the analysis  
12 wasn't done, it wasn't presented to the jury. There's no way  
13 that a jury, unless they had a copy of a patent law primer,  
14 could somehow do the analysis for themselves, and that was  
15 Cornell's burden. So I submit that those two claims cannot  
16 be infringed either literally or under the doctrine of  
17 equivalents.

18 Furthermore, there was no evidence presented  
19 that anyone has practiced the method claims. Not a single  
20 word, as if the jury was to infer that someone out there  
21 directly infringes these claims.

22 My fourth point is intertwined with the claim  
23 construction arguments that you'll hear tomorrow and so I  
24 will keep it very brief and that is that this court already  
25 found that as a matter of law, any claim in which the

1 dispatch stack was construed have a  $\beta(D)$  field which tracks  
2 the write-after-read dependency is not infringed as a matter  
3 of law, literally and under the doctrine of equivalents. So  
4 to the extent the court might change the construction of  
5 dispatch stack to include the  $\beta(D)$  field, and its equivalent,  
6 then all of the asserted claims for which that construction  
7 applies would not be infringed.

8 And my last point is that without any evidence  
9 of direct infringement by others as a threshold, there can  
10 certainly be no proof of indirect infringement. But more  
11 than that, indirect infringement of course doesn't lie merely  
12 when someone else directly infringes the patent. There has  
13 to be proof of active inducement by HP, that's not in the  
14 record. And for contributory infringement there has to be  
15 additional steps proved which the jury hasn't heard, so  
16 there's neither direct infringement by HP literally or under  
17 the doctrine of equivalents of the asserted claims, nor is HP  
18 liable for contributory or inducement infringement.

19 THE COURT: Okay, thank you, Mr. Shelton. Who  
20 will respond? Will you respond, Mr. Poplawski?

21 MR. POPLAWSKI: May I, your Honor?

22 THE COURT: Sure.

23 MR. POPLAWSKI: Your Honor, I guess what I  
24 would like to do is to start from the back first with  
25 Mr. Shelton's I guess last three points and then I'll --

1 THE COURT: The indirect infringement?

2 MR. POPLAWSKI: And then I'd like to get into  
3 the more technical stuff.

4 THE COURT: Okay, sure.

5 MR. POPLAWSKI: Now as to the last point, the  
6 contributory and induced infringement, well, we've put on  
7 what I think is a cornucopia of evidence. We've got the  
8 press releases, the letters, the configuration guides, I  
9 mean, so I don't see that there's an issue there at all.

10 Now on the  $\beta$ (D), this is now I think HP's  
11 fifth or sixth attempt to rewrite the court's claim  
12 construction. Here's what happened with  $\beta$ (D).

13 THE COURT: And probably not the last.

14 MR. POPLAWSKI: Probably not, that's true.  
15 The dependent claims, and I'm sure Mr. Shelton will get up  
16 and correct me if I'm wrong, claims 7 through 12 and there  
17 may have been one other, they have specific language in them  
18 which called for the tracking of a particular type of  
19 nonessential data dependency called a write-after-read, but  
20 the bottom line, it was a particular type. Judge Peebles in  
21 his recommendation and report rejected Cornell's position  
22 that the tracking of that particular type of nonessential  
23 data dependency was equivalent to the tracking of another  
24 type of nonessential data dependency called  
25 write-after-write. And as to that dependency, it was

1 Cornell's position and remains, although it's not an issue in  
2 the case, is that the IRB does that, in fact the court may  
3 recall, I asked Dr. Worley if he told me during our meeting  
4 if the IRB detected write-after-write type data dependencies  
5 in computer instructions and he said yes. Now that's perhaps  
6 an issue for another day.

7 Now, and so moreover, the patent covers two  
8 types of nonessential data dependencies. Column 8 or  
9 something like that. This is the subject of a three- or  
10 four-day *Markman* hearing. In fact there's testimony, live  
11 testimony from Dr. Flynn and Dr. Smith in agreement with  
12 that, which is reflected in Judge Mordue's opinion.

13 Lastly, the exemplary chart 1 that we've seen  
14 a lot in this case, that just deals with one of those two  
15 types of nonessential data dependencies, so it's not accurate  
16 to say that  $\beta(D)$  is one and only one type of nonessential  
17 data dependency.

18 Now, let me turn to the third from the last  
19 point that Mr. Shelton made, namely that there's no evidence  
20 of the practicing of the method claims. Well, the whole  
21 point, the whole reason for our arriving at the stipulation  
22 as to Boeing and Ford's use of the invention was so that we  
23 didn't have to go out and depose HP's customers to profuse.  
24 That's what we did. There's no question that there's a  
25 stipulated order that from 1996 on, at least Boeing and Ford

1 have used each and every one of the PA-8000 family processors  
2 in servers and workstations. Moreover, I'm sure that the  
3 court is well familiar with the Federal Circuit precedent  
4 that you don't need to identify each and every customer to  
5 establish that there's use. In fact, you can rely on  
6 circumstantial evidence, too, under certain circumstances.  
7 And so we know we have to prove that the claim elements are  
8 met, but I don't think there's any issue that assuming we  
9 prove the claim elements are met and that's from the jury,  
10 the method's been practiced.

11 Okay. A(S1) and a(S2). Dr. Smith spent a lot  
12 of time on this, your Honor, these essential data dependency  
13 fields and also talking about the logic associated with them.  
14 I know that the court said, yeah, he went through everything  
15 and he checked it off, but before he did that, he laid out  
16 how the instruction reorder buffer works. We spent a lot of  
17 time on the -- what they call the flags, what they call S1  
18 and S2, D. Dr. Smith talked about how they worked, he said  
19 they were the names HP used. We talked about the renamed and  
20 unrenamed registers, we talked about how the source values  
21 are stored, and then he got in the doctrine of equivalents.  
22 I mean he applied function, way, and result, and I think the  
23 court heard this multiple times.

24 Moreover, as to the claims 1 and 14, as I'm  
25 sure the court's aware when we're talking about equivalents

1 on means plus function, it's literal infringement is  
2 equivalents thereof. So I mean Dr. Smith went through the  
3 schematics, I think that -- I just don't think there's any  
4 question here that we've put on a wealth of evidence. Now  
5 they may -- they disagree, they've got their own spin on  
6 that.

7 Reservation circuit. He went through the  
8 schematics, he talked about parts of the ERS, and when he  
9 went through the schematics, he described how you have two  
10 inputs to the reservation circuit, he showed you where in the  
11 schematics that happens, he showed you what the output was,  
12 so he said, okay, we've got an input, we've got this op  
13 field, right, we've got another input and then we have an  
14 output. Now, they may disagree with Dr. Smith's  
15 interpretation of those schematics, they may disagree with  
16 Dr. Smith's interpretation of the ERS, and they could put on  
17 expert testimony to do that.

18 THE COURT: Does the court require the  
19 counting feature?

20 MR. POPLAWSKI: Does the court?

21 THE COURT: The court's claim construction.

22 MR. POPLAWSKI: Your Honor, I think that this  
23 27 example that HP used is a red herring. As I think the  
24 court has observed, at the end of the day, you're going to  
25 have, there's going to be one writer, all right, one

1 container that's going to supply the value to the source that  
2 the instruction that's got the dependency needs. And what's  
3 happening here is the invention establishes a count, it's  
4 representative of the number of data dependencies because in  
5 that instance with renaming, there's ultimately going to be  
6 one writer, right, that's going to supply the value that the  
7 instruction is going to need to consume.

8 Now they can, they can put on evidence as they  
9 did today that, you know, you really got multiple containers  
10 and slots going on here and things are different because of  
11 renaming, but our position's pretty simple here. If I've got  
12 an instruction that's in format OP, S1, S2, D, and it's  
13 originally a general register and it gets renamed, all right,  
14 that -- the value's the same, that's going to get supplied.  
15 Now we didn't get into this because they haven't raised it  
16 yet, but you know, the value, there's only one value that's  
17 going to be supplied no matter what, and if they disbelieve  
18 that, they can put on evidence, but Dr. Smith clearly showed  
19 how the 1 is representative of the dependency, he talked  
20 about the sclat\_04 latch that's representing the essential  
21 dependency field, he described how it worked, he talked about  
22 the logic that was associated with that, he went through  
23 parts of the schematic that describe how it obtains the  
24 initial value, decrements the value, determines when it's 0,  
25 all of that, and then he checked it off.

1 THE COURT: Okay, thank you. Just a few  
2 comments here, Mr. Shelton.

3 MR. SHELTON: Yes, I'll be very brief here,  
4 your Honor, just one point. It's interesting to hear about a  
5 value, of course there's only one value that will ever go to  
6 another instruction but the patent doesn't talk about values.  
7 The patent defines alpha specifically as such. That alpha  
8 represents the number of times that a particular register SI  
9 is used as a destination register in preceding uncompleted  
10 instructions. There's nothing about renaming in this patent.  
11 So Dr. Torng had to count all of the numbers, it's in the  
12 patent, it's in the court's construction, and only by  
13 completely ignoring that definition can you say that one is  
14 sufficient when there are more than one. Thank you, your  
15 Honor.

16 THE COURT: Okay. Thank you. Mr. Allcock,  
17 are you --

18 MR. ALLCOCK: Your Honor, I think, I think  
19 we've said about all of the substance of what I want to say  
20 on what is the overall EMVR point. I mean, I still don't  
21 believe, even with allowing them to drop down one level they  
22 really have satisfied what needs to be done under the law to  
23 have a legitimate damage case. I mean, I've had that sheet  
24 brought down to show that's what they would need to do, I  
25 mean either they are entitled to the entire market value rule



1     which I don't believe they are, or they are under the pre,  
2     under the non-entire market value rule in which they have to  
3     apportion. And so I don't think they're entitled to the  
4     entire market value rule because they haven't proven that the  
5     patented feature is the basis of consumer demand even on the  
6     performance level, much less if you go to the next level, but  
7     even on the performance level, they haven't proven that it's  
8     the basis.

9                     THE COURT: Doesn't that depend on some  
10     factual findings that the jury's entitled to make?

11                    MR. ALLCOCK: I think that list is undisputed.  
12     I don't --

13                    THE COURT: And if the jury determines that  
14     the Torng invention dwarfs that and is the significant factor  
15     responsible for the performance factual call that they're  
16     entitled to make, doesn't your list here disappear and then  
17     aren't they entitled to the entire market value rule and  
18     hasn't Dr. Stewart made an effort to, in accordance with this  
19     court's ruling, to tie the claimed invention more closely to  
20     his royalty base, thus justifying their damages calculation?

21                    MR. ALLCOCK: So what the court's saying is  
22     dropping down the one level from the system to the CPU.

23                    THE COURT: Made an effort in accordance with  
24     this court's --

25                    MR. ALLCOCK: I don't believe --

1 THE COURT: -- economic desire for an economic  
2 link, he's made an effort to more closely tie the claimed  
3 invention to the entire market value he wishes to recover.

4 MR. ALLCOCK: I would agree with the "more  
5 closely", I wouldn't agree that he satisfied the requirement,  
6 but if the court --

7 THE COURT: With the "more closely" added to  
8 the jury's prerogative to make the factual findings.

9 MR. ALLCOCK: I don't think they've done it, I  
10 really don't.

11 THE COURT: You don't think they've done it,  
12 okay. I think I want to hear from Mr. Anderson on this  
13 point.

14 MR. POPLAWSKI: Yes, your Honor. So with  
15 respect to these factors, the testimony by Dr. Smith has been  
16 that he ran his performance studies in order to take out all  
17 the other factors, find what is the performance attributable  
18 to the invention. Now HP may dispute that, but it's an issue  
19 the jury can weigh, based on the testimony provided.

20 THE COURT: Okay, I think you've got that  
21 point, go on.

22 MR. ANDERSON: We've also established that  
23 HP's marketing materials repeatedly recognize the  
24 significance of out-of-order execution to performance in  
25 touting it to customers. Federal Circuit precedence allows

1     that when a accused infringer uses the invention in marketing  
2     materials, touts it, that can be and is evidence of  
3     attributable to market demand. We have the press releases in  
4     particular that tie the intelligent execution to being based  
5     on out-of-order execution, and a order of finding an  
6     established fact in this case that customers did in fact  
7     receive those press releases and it was intended to convey to  
8     them that intelligent execution was at least one of the  
9     reasons they should purchase.

10           Now we have the additional facts of multiple  
11     documents, the survey data that's been put in, client quotes  
12     that have been put in, P230. Documents within HP that  
13     recognize that the customers paid for performance, P178. All  
14     of those under the *Bowes* and *Heidelberger* case would support  
15     the proposition that you don't have to have a customer  
16     saying, I want to buy an IRB. You have to have a customer  
17     that says, I want to buy that performance. And the evidence  
18     that's been presented to the jury is sufficient, particularly  
19     if we're going to go down to a brick or processor level, and  
20     they have the basis right now in the record to do a royalty  
21     on the smaller component. Although that wasn't what was the  
22     offered value by Dr. Stewart, they have those values, they  
23     can look at the evidence and weigh it and come to their view  
24     on what the appropriate module processor is, and look at the  
25     facts and say yes, customers wanted that because of the

1 performance being delivered by out-of-order execution, at  
2 least substantially so.

3 THE COURT: Okay. Thank you, Mr. Anderson.  
4 Have you adequately preserved your rights, Mr. Allcock?

5 MR. ALLCOCK: I've done my best, your Honor.

6 THE COURT: Okay. And as the court will take  
7 all this under advisement and will rule on it when the time's  
8 most appropriate, having heard the remainder of the evidence.

9 MR. ANDERSON: Your Honor, we have one  
10 request.

11 THE COURT: Yes.

12 MR. ANDERSON: With respect to Dr. Stewart, in  
13 the event that we decide not to bring him back, he would only  
14 like to put on the record that the conclusion that he would  
15 have offered if permitted as our offer of proof. I think  
16 we've covered everything else but we aren't certain whether  
17 he ever said, "In my opinion the royalty would be."

18 THE COURT: Would you like to, out of the  
19 jury, put him back on and have him make a statement at this  
20 point?

21 MR. ANDERSON: That's what I propose, your  
22 Honor.

23 THE COURT: Let's do it right now.

24 MR. ALLCOCK: Your Honor, we can stipulate to  
25 that.

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1 MR. ANDERSON: Would you?

2 THE COURT: Let's bring him up, let him make  
3 his statement, because -- if there's any further stipulations  
4 necessary, I appreciate your offer.

5 Dr. Stewart, you remain under oath.

6 THE WITNESS: Thank you, your Honor.

7

8 M A R I O N S T E W A R T , recalled as a  
9 witness and being previously duly sworn, testifies as  
10 follows:

11 DIRECT EXAMINATION BY MR. ANDERSON:

12 Q Dr. Stewart, would you please, you've  
13 discussed the factors underlying your opinions with the jury  
14 and with the court last night in the *Daubert* hearing. I  
15 would like you to summarize that opinion including the amount  
16 of reasonable royalty that you find should be awarded in this  
17 case.

18 A Thank you. As I expressed during my  
19 discussions with the court, my opinion is, and I would have  
20 testified to the jury that in my opinion, the royalty base  
21 should be the revenue from servers and workstations, and the  
22 appropriate royalty to compensate for any infringement that  
23 is found should be a 2½, should be 2½ percent of that total  
24 server and workstation revenue. I apologize, I did not bring  
25 a copy of the chart with me.

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1 THE COURT: You can lead the witness if  
2 necessary at this point.

3 MR. ANDERSON: I will, your Honor.

4 Q Would it be your opinion therefore that the  
5 royalty base would be 36,178,667 -- \$36,178,667,249?

6 A Yes, sir, it would.

7 Q And the royalty rate would be 2½ percent?

8 A Yes.

9 Q For a reasonable royalty of \$904,446 -- I keep  
10 doing that. \$904,446,681.

11 A Yes, sir, that's correct.

12 MR. ANDERSON: Thank you, Dr. Stewart.

13 THE COURT: Is there anything else that  
14 Dr. Stewart would want to put on the record?

15 MR. ANDERSON: We've discussed it, your Honor,  
16 we had some very thorough discussions, so long as what we  
17 discussed last night in the *Daubert* is also part of the  
18 record.

19 THE COURT: That is part of the record  
20 completely and we can, I think Mr. Allcock, if you could, I  
21 think we could also allow all of the exhibits that would have  
22 been offered by Dr. Stewart to be put in the record to  
23 preserve their rights to raise those issues at a different  
24 level.

25 MR. ALLCOCK: Sure, no problem, your Honor.

1 MR. ANDERSON: We'll put in the presentation  
2 as it would have been put in, your Honor, for that record.

3 THE COURT: That will be very good, and if at  
4 any point Dr. Stewart needs to supplement his explanation, we  
5 could allow him to do it in writing even if necessary so he  
6 doesn't have to wait around. Is that suitable, Mr. Allcock?

7 MR. ALLCOCK: Absolutely, your Honor.

8 THE COURT: Okay. Thank you.

9 MR. ANDERSON: Thank you, your Honor.

10 THE COURT: Anything else, then?

11 MR. POPLAWSKI: Not for plaintiffs, your  
12 Honor.

13 THE COURT: Thank you, Dr. Stewart, for  
14 indulging us all here.

15 THE WITNESS: Thank you, your Honor.

16 (Whereupon the witness was excused.)

17 THE COURT: Now I think we have Ms. Kim had  
18 made motions.

19 MS. KIM: Your Honor, I have a question,  
20 Ms. Penning kindly pointed out a mistake on my list,  
21 Plaintiffs withdraw P1872.

22 THE COURT: So the list you read to me earlier  
23 is the same except you've withdrawn one?

24 MS. KIM: Yes, your Honor.

25 THE COURT: And is it all suitable,

1 Ms. Penning?

2 MS. PENNING: No, your Honor, we have  
3 objections to three exhibits. They all relate to the nuclear  
4 winter allegations and we object to these three on hearsay,  
5 relevance, and 403 grounds. I can read the numbers and we  
6 can also pop them up on the screen, I'm not sure how your  
7 Honor would like to rule on that.

8 THE COURT: Let's make sure I know what I'm  
9 talking about.

10 MS. PENNING: Could you pull out P960, please.  
11 Your Honor, this is the letter from Hunter Rawlings to Carly  
12 Fiorina, it was on the screen with the witness for a brief  
13 time but I believe the line of questioning was cut off before  
14 it was ever discussed with the witness, and again, we would  
15 object on hearsay, relevance, and 403 grounds.

16 THE COURT: This was -- I'm sorry, Ms. Kim,  
17 can you tell me which --

18 MR. ANDERSON: This is the letter that Hunter  
19 Rawlings sent to Carly Fiorina after the visit on site at  
20 Cornell in which he discussed briefly in his testimony.

21 THE COURT: He discussed it in his testimony?

22 MR. ANDERSON: Correct.

23 THE COURT: And your objection to it is?

24 MS. PENNING: Hearsay, relevance, and 403,  
25 your Honor. And perhaps my recollection doesn't serve me



1       correctly, but I don't believe it was discussed with the  
2       witness. I believe it was put up on the screen and then your  
3       Honor cut off that line of questioning.

4               MR. ANDERSON: No, he was answering questions  
5       about the beginning of the letter, and then your Honor  
6       pressed the parties to move on and so he didn't answer  
7       further questions, but my belief and recollection is, we  
8       could check the transcript to be certain but that there was a  
9       discussion of this letter.

10              MR. POPLAWSKI: I'm sorry to interject, your  
11       Honor, but at that point I believe that I was being  
12       responsive to the side bar.

13              THE COURT: I think you were too and I think  
14       I'm not going to punish you for responding to my desire to  
15       move more quickly so this will be admitted. I don't perceive  
16       that there's any grave prejudice or lack of relevance.

17              MS. PENNING: Thank you, your Honor. And my  
18       apologies to the extent I misstated the record, it was  
19       definitely not my intent to do so.

20              THE COURT: No, I didn't perceive that you  
21       were misstating anything, Ms. Penning.

22              MS. PENNING: Thank you, your Honor. The next  
23       two are very similar. The first one is P297 and these were  
24       shown during the deposition of Wayne Johnson. I -- again,  
25       this is hearsay, relevance, and 403. It is an e-mail in

1     which he recounts a conversation had with someone else in the  
2     airport about impressions of the meeting that occurred on  
3     April 15th, 2002.

4                   THE COURT:   I hate e-mails but I'm not going  
5     to take my personal detestation out on the parties.

6                   MR. ANDERSON:   Document from a HP employee  
7     concerning the meeting with Mr. Swieringa which he testified  
8     to thus authenticating that the meeting actually occurred  
9     providing a basis for its authentication.

10                  THE COURT:   Just for my information, how much  
11     do you suppose, this is not a fair question, you don't have  
12     to answer if you don't want to, how much do you suppose the  
13     parties spent on discovering e-mails?

14                  MR. ANDERSON:   Your Honor, I have the  
15     privilege of being on the electronic discovery task force in  
16     my firm.

17                  THE COURT:   How much do you suppose you both  
18     spent on this?  Am I going overboard to say it was more than  
19     a million dollars?

20                  MR. ANDERSON:   I wouldn't be surprised, your  
21     Honor.  Electronic discovery is certainly an issue.

22                  THE COURT:   And how many documents do you  
23     suppose we will have gotten out of it?  This is the only one  
24     I recall right off the bat.  Are there any others?

25                  MR. ANDERSON:   I think there are a few, I

1 think, I'm not certain. But I understand, your Honor.

2 THE COURT: Could I ask another question. You  
3 would have gotten nuclear winter anyway, right?

4 MR. ANDERSON: Yes.

5 THE COURT: It would have come out in the  
6 depositions and so forth. Okay. This is just for my  
7 personal information, but I find sometime after we're through  
8 with this, I'm going to, maybe I'll call you both on the  
9 phone and ask you what would the chief judge of a circuit do  
10 to put an end to e-mail discovery.

11 MR. ANDERSON: You might as well consider  
12 answering telephones as well, your Honor, at the same time.

13 THE COURT: Well, I'd be really anxious to  
14 know what we could do. I understand the other side of it,  
15 that now and then somebody discovers something that's really  
16 important, but I wonder, even if we gauge all the economics  
17 of that, if it's even those occasional discoveries are worth  
18 the expense. But I'll admit this as it was part of the  
19 presentation. Is that -- you had one other, Ms. Penning,  
20 that you objected to?

21 MS. PENNING: Your Honor, it's so similar,  
22 I'll withdraw the objection.

23 THE COURT: All right, fine. So all of  
24 Ms. Kim's proffered evidence is admitted?

25 MS. KIM: Thank you, your Honor. May I give

1 the videos.

2 THE COURT: You had the two demonstratives?

3 MS. KIM: Video.

4 THE COURT: Those were the video depositions,  
5 Ms. Penning.

6 MS. PENNING: Will they go back to the jury,  
7 your Honor, or are they just for the record?

8 THE COURT: They're for the record.

9 MS. PENNING: No objection, your Honor.

10 THE COURT: Okay, thank you, Ms. Penning. You  
11 have some things to read to me too?

12 MS. PENNING: I do, from yesterday. With  
13 Dr. Smith we have those DDX exhibits, the demonstratives,  
14 they were DDX33 through 41 and DDX63 through 69, plaintiffs  
15 have now been provided with a binder of all the DDX exhibits  
16 and so hopefully there will be no objection to those.

17 THE COURT: Why don't you read through them  
18 and then I'll ask Ms. Kim if she has any exhibits.

19 MS. KIM: Exhibits from yesterday, the  
20 demonstrative exhibits from yesterday, we don't have any  
21 objections.

22 THE COURT: They're admitted for the record.

23 MS. PENNING: Okay. From today, we have, with  
24 Mr. Stewart we have DDX44, DDX70, DDX72, DDX73, DDX74, we  
25 have D478, D484. With Mr. Rappaport we have P523. With

1 Mr. Lesartre we have DDX17, DDX18, DDX47, DDX48, DDX50,  
2 DDX45, DDX78, DDX51, and P436. The rest that were used with  
3 him were admitted previously, your Honor.

4 THE COURT: Ms. Kim, any objections?

5 MS. KIM: We have no objections, but one more  
6 thing, your Honor. Plaintiffs would like to submit into  
7 evidence the slides used in its case in chief, both opening  
8 slides and other presentations that we --

9 THE COURT: A slide that what?

10 MS. KIM: PowerPoint presentations that we  
11 used.

12 THE COURT: Oh, in the opening statements.

13 MS. KIM: And also with the witnesses.  
14 Unfortunately we don't have copies for the court now, and  
15 we'll provide that as soon as possible.

16 THE COURT: Why don't the parties look at  
17 those and see if there's anything there, that strikes me  
18 there might be a few things that have been excluded.

19 MS. KIM: We will make sure.

20 MR. POPLAWSKI: That's correct, your Honor, we  
21 did remove two slides from Dr. Smith's presentation that were  
22 findings as to ordinary skill in the art so those of course  
23 will not be presented.

24 THE COURT: Then in that case, I don't expect  
25 I'll get any objection but why don't we give everybody a

1 chance to look at it, and meantime I did accept all of your  
2 proffers for the record, didn't I, Ms. Penning?

3 MS. PENNING: Yes, thank you, your Honor.

4 THE COURT: Okay, fine. Where we at?  
5 Anything else?

6 MR. ALLCOCK: I think we're done for today.

7 THE COURT: Okay, then let's remind ourselves  
8 we're going to meet tomorrow at 10, I think the doors don't  
9 open until 9:30, is that right?

10 COURT SECURITY OFFICER: Correct.

11 THE COURT: But we'll meet here at around 10,  
12 and our agenda is primarily to decide what we're going to  
13 instruct the jury. I'll indulge you whatever else you want  
14 to talk about for as long as I can stand it. And there's no  
15 dress code, so you're welcome to come as comfortably as you'd  
16 like. Anything else tonight? Thanks.

17 MR. ALLCOCK: Have a great night, your Honor.

18 THE COURT: Thank you.

19 (6:05 p.m.)  
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C E R T I F I C A T I O N

I, JODI L. HIBBARD, RPR, CRR, CSR, Official  
Court Reporter in and for the United States District Court,  
Northern District of New York, DO HEREBY CERTIFY that I  
attended the foregoing proceedings, took stenographic notes  
of the same, and that the foregoing is a true and correct  
transcript thereof.

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JODI L. HIBBARD, RPR, CRR, CSR  
Official U.S. Court Reporter